UNIFORM

EXAMINATION

QUESTIONS

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UNITED STATES OF AMERICA.

UNIFORM EXAMINATION

QUESTIONS

— FOR —

TEACHERS' LICENSES,

— IN THE —

STATE OF NEW YORK.

PREPARED UNDER THE DIRECTION OF

Hon. ANDREW S. DRAPER, State Superintendent,

— BY —

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PREFACE.

These questions were prepared by the Institute Faculty of the State of New York, under the direction and supervision of the State Superintendent of Public Instruction. They were designed for the examination of persons desiring licenses to teach in the public schools of the State of New York.

These examinations have been adopted in every commissioner district in the state and beneficial results are everywhere apparent.

A careful study of this volume will assist candidates in passing future examinations. It will also aid in passing any examinations in these subjects, whether in this or any other state. If rightly used, it will promote good education and correct methods of teaching.

Rochester, N. Y., September, 1888.

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ALVIN P. CHAPIN.

QUESTIONS

—FROM THE—

DEPARTMENT OF PUBLIC INSTRUCTION,

—FOR—

UNIFORM STATE EXAMINATIONS FOR TEACHERS' CERTIFICATES.

HELD SATURDAY SEPTEMBER 3, 1887.

ARITHMETIC.

1. Divide $9\frac{3}{5} \times \frac{20}{8}$ by $\frac{5}{7} + \frac{3}{5}$. Subtract $2\frac{1}{3}$ from the sum of $8\frac{1}{9}$, $3\frac{1}{4}$, $7\frac{1}{6}$, $8\ \frac{1}{10}$. 15

2. Extend the items and make the footing in the following bill:

ALBANY, N. Y., September 1, 1887.

Mr. ARTHUR FLOYD, in account with R. J. ALLEN & CO.

6432 lbs. stove coal, @ $6.25 per ton ..... $
6432 ft. inch boards, @ $19.25 per M.....
8.33 cords wood, @ $5.55 per cord..... 15

3. Divide 2 gals. 2 qts. 1 pt. into 2,000 equal parts.
4. Find the legal interest of $4,352.50 for 1 year, 3 months and 13 days. 10
5. A man having $2,025 in the bank drew out $1,560. What per cent. did he draw out? 10
6. A pile of 4-foot wood 24 rods long contains 100 cords. What is its height? 20
7. A man sells pens at $\frac{1}{8}$ cent apiece above cost and makes 20 per cent. What do the pens cost him apiece? At what price per dozen does he sell them? 10

GRAMMAR.

NOTE.—The Commissioner will retain the following extract and dictate to all applicants as a test in Orthography, Penmanship, Capitalization and Punctuation.

1–2. Dictation. (Art. IV, sec. 2, Constitution of U. S.)

1. The citizens of each State shall be entitled to all privileges and immunities of citizens in the several States.
2. A person charged in any State with treason, felony, or other crime, who shall flee from justice, and be found in another State, shall, on demand of the executive authority of the State from which he fled, be delivered up, to be removed to the State having jurisdiction of the crime. 30
3. Analyze, by diagram or otherwise, the first sentence. 10
4. Name and give examples of the different parts of speech used in extract. 10
5. Write an interrogative sentence; declarative; imperative; exclamatory. 10
6. Analyze, by diagram or otherwise, the second sentence. 10
7. Distinguish between Language Lessons and Technical Grammar. State the position of each in a common school course.

GEOGRAPHY.

1. Define, by outline or otherwise, the boundaries of your own county, showing its position in the State. 5
2. Name three canals in the United States, and mention the waters connected by each. 10
3. Give route by water from Boston to St. Louis; from St. Augustine to Naples. 10
4. Give the geographical position of France; its form of government; its climate and leading productions; three important cities; two rivers. 20
5. State what you know of the geographical distribution of coal and iron in the United States. 15
6. What is meant by Standard Eastern Time? 20
7. Name the river basin of North America. 20

PHYSIOLOGY AND HYGIENE.

1. Describe the shape and position of the heart. 15
2. What are muscles? 10
3. How are the bones classified? Of what is bone composed? 10
4. Name the digestive organs. 10
5. How may the teacher promote the health of pupils? 15
6. Give a general description of the brain. 20
7. Mention the principal organs contained in each of the two great cavities of the trunk. 20

GENERAL QUESTIONS.

1. What is the organization known as the "Knights of Labor?" 20
2. Name five living American authors, and three statesmen. 20
3. Outline briefly your plan for the first day in school. 20
4. How may the teacher cultivate a taste for good reading? 20
5. What is meant by Civil Service Reform? 20

AMERICAN HISTORY AND CIVIL GOVERNMENT.

1. Name three discoverers in the employ of the Spanish, English and French, respectively, giving a discovery of each. 25
2. What were the leading events in the French and Indian war? 15
3. What causes led to the Revolutionary war? 15
4. Comment upon the relative position of the United States to-day among the great powers of the world. 15
5. Name the legislative branches in the National and State Governments. 10
6. Name the members of the president's cabinet and the title of each. 15
7. What is tariff? 10

METHODS.

Outline a typical lesson for one of your grades in:

1. Reading; 25
2. Arithmetic; 25
3. Spelling; 25
4. Geography. 25

SCHOOL LAW.

1. State three ways in which a teacher may be licensed. 20
2. Mention the legal holidays in this State. 20
3. Is a teacher authorized to hold religious exercises during school hours? 20
4. Has the teacher authority to expel a pupil? To suspend? 20
5. What legal remedy has a teacher against any person who creates a willful disturbance during school hours? 20

ALGEBRA.

1. Give and explain briefly the principal signs used in Algebra. 20
2. Required in its simplest form, the quotient:

$$\frac{4a\,(a^2-x^2)}{3b\,(c^2-x^2)} \div \frac{a^2-ax}{bc+bx}$$ 20

3. Expand $(a-b)^7$. 20
4. What fraction is that, such that if the numerator and denominator be each increased by 1, the value is 1-2; but if each be diminished by 1, the value is 1-3? 20
5. What two numbers are those, whose sum is 41, and the sum of whose squares is 901? 20

ANSWERS TO QUESTIONS FOR SEPTEMBER 3, 1887.

NOTE.—It will be seen that the answers printed below are, in many cases, merely suggestive. Examiners will not be confined to the precise form or substance except where exact answers are required.

ARITHMETIC.

1. 186-23. 24 53-180.
2. $ 20.10.
   123.82.
   46.23.
   ———
   $190.15
3. .0105 pt.
4. $335.87.
5. 77 1-27 per cent.
6. 8. 8-99 feet.
7. 5-8 cent apiece ; 9 cents per dozen.

GRAMMAR.

1–2. Answers unnecessary.

3. Answer according to any recognized system or standard.

4. the.....article, or adjective ;
   state..... .....noun ;
   who.....pronoun ;
   in..... .....preposition ;
   several.....adjective ;
   flee .....verb ;
   and.....conjunction ;
   up.....adverb, as used here.
   having..... .....participle, or verb.

5. Have you read the book ?
   The boy runs.
   Put down that hat.
   Alas ! How sad it is.

6. Answer according to any recognized system or standard.

7. Skill in the use of oral and written language is the aim of Language Lessons, which should be given when the pupil first enters school. Ability to analyze, parse and criticise, is the aim of lessons in Technical Grammar, which comes properly within the last two years of the common school course.

GEOGRAPHY.

1. Answer according to locality.

2. Erie Canal. Lake Erie and Hudson River.
   Delaware and Hudson. Delaware and Hudson Rivers.
   Wabash and Erie. Lake Erie and Ohio River.

3. From Boston on Boston harbor, Massachusetts bay, Atlantic Ocean, Florida strait, Gulf of Mexico, and Mississippi river to St. Louis.
   From St. Augustine on the Atlantic ocean, Strait of Gibraltar, Mediterranean sea, and Bay of Naples to Naples.

4. Western part of Europe; republic; climate varied; productions, silk, wine, semi-tropical fruits and cereals; Paris, Marseilles and Lyons; Seine and Rhone.
5. The principal coal fields of the United States are those of the Appalachian region, Illinois, and Western Indiana, and Missouri and Southern Iowa. The principal iron fields are in the Appalachian region, and in Missouri.
6. The time adopted by those railroad companies whose roads are in that belt contiguous to the 75th meridian, seven and one half degrees approximately on each side. It is five hours slower than Greenwich time.
7. The arctic slope, the Hudson Bay Basin, the St. Lawrence basin, the Atlantic slope, the Mississippi basin, the Great Basin, and the Pacific slope.

PHYSIOLOGY AND HYGIENE.

1. The heart is the organ which propels the blood, and is situated to the left of the center of the chest. It is a hollow, muscular organ, shaped like a strawberry, and suspended with the point downward.
2. The muscles are the instruments of motion. They are composed of fine fibres or strings, held together by connective tissue, and bound up in smooth, silky casings of thin membrane.
3. First, the bones of the head; second the bones of the trunk; third, the bones of the upper extremities; fourth, the bones of the lower extremities. The bones are composed of animal matter, which gives toughness and elasticity, and of mineral matter, which gives hardness and stiffness.
4. First, the mouth and salivary glands; second, the stomach; third, the pancreas; fourth, the liver; fifth, the intestines.
5. By insisting upon the proper care and arrangement of the school premises. By imparting a knowledge of hygienic laws and directing obedience thereto.
6. The brain, the principal organ of intelligence, is situated in the head, and is surrounded and protected by the bones of the skull. It is divided into two parts—the cerebrum or great brain, and the cerebellum or little brain, separated by membrane. The substance of the brain is composed of white and gray matter. The outer surface is furrowed. It is believed that the cerebrum is the chief organ of the mind.
7. The smaller cavity, the chest, contains the lungs and heart. The abdomen, the largest cavity of the body, contains the stomach, liver and kidneys.

GENERAL QUESTIONS.

1. A society, secret in its nature and composed of wage-workers, to protect the interests of labor.
2. Bancroft, Holmes, Warner, Clemens, Aldrich. Conkling, Thurman, Blaine.
3. Be early at school. Have all preparations completed before the hour for commencing. Take names of pupils as soon as they reach school, and learn what you can relative to their studies. Call to order in time. Introduce yourself with a few pleasant remarks. Make opening exercises short. Complete enrollment. Assign lessons. Begin with the order of study and recitation that you think it will be desirable to continue.
4. By reading the best authors.
5. The appointment of persons to civil offices on the sole ground of qualifications therefor.

AMERICAN HISTORY AND CIVIL GOVERNMENT.

1. Columbus—Touched first at one of the Bahama Islands.

"To Castile and Leon
Columbus gave a new world."

Jacques Cartier—River and Gulf of St. Lawrence.

John Cabot—Labrador. Cabot discovered the western continent almost 14 months before Columbus sighted the mainland. (Bancroft.)

2. Braddock's defeat; expulsion of the Acadians; capture of Louisburg; battle of Lake George; attack on Ticonderoga; evacuation of Ticonderoga and Crown Point; capture of Quebec.

3. (1.) American training in self-government.

(2.) The attempted exercise of unconstitutional authority by Great Britain. (*a*) Writs of assistance. (*b*) The stamp act. (*c*) Quartering of troops in towns. (*d*) The tea tax. (*e*) The withdrawal of the right of self-government.

(3.) The punishment inflicted by England upon the colonies for their remonstrance.

4. The United States is the leading republic of the world. Natural resources, geographical position, and character of population under a representative government place her in the foremost rank among the great powers of the world.

5. National—Senate and House of Representatives.

State—Senate and Assembly.

6. Bayard, Secretary of State.

Fairchild, Secretary of the Treasury.

Endicott, Secretary of War.

Whitney, Secretary of the Navy.

Vilas, Postmaster-General.

Garland, Attorney-General.

Lamar, Secretary of the Interior.

7. A list or table of duties or customs imposed by government, to be paid on goods imported or exported.

METHODS.

1–4. Answers unnecessary.

SCHOOL LAW.

1. By State Superintendent of Public Instruction; by school commissioners, or other officers with similar functions; by obtaining a diploma from a state normal school.

2. January 1, February 22, May 30, July 4, first Monday in September, December 25, any general election day in this State, every Saturday afternoon, and Thanksgiving Day.

3. A teacher has no authority to insist upon religious exercises of any kind.

4. No. Yes; the teacher may suspend for the day, or long enough for consultation with trustees.

5. He may enter complaint against such offender before any justice of the peace of the county, or the mayor or any alderman, recorder or other magistrate of the city, wherein the offense was committed.

ALGEBRA.

1. The principal signs used in Algebra are the following: $=$, $+$, $-$, $\times$, $\div$, ( ), $<$, $\sqrt{}$. Each sign represents certain words, and is used to express the various operations in the clearest and briefest manner.
2. $\frac{4(a+x)}{3(c-x)}$
3. $a^7-7a^6b+21a^5b^2-35a^4b^3+35a^3b^4-21a^2b^5+7ab^6-b^7$.
4. 3-7.
5. 15 and 26.

QUESTIONS FOR EXAMINATION, OCTOBER 1, 1887.

ARITHMETIC.

NOTE.—All written work should be shown in full.

1. Add $3\frac{1}{8}$ ($\frac{3}{4}$ divided by $\frac{3}{16}$), XCVIII, and four and seven hundred-thousandths. 10
2. Find the least common multiple and greatest common divisor of 52, 78 and 143. 15
3. What will $1\frac{5}{7}$ acres of land cost at $\frac{1}{2}$ cent per square foot? 10
4. From a barrel of wine, 18 gal. 3 qt. 1 pt. were drawn. What per cent. of the whole remained in the barrel? 15
5. What will 1893 lbs. hay cost at $12.38 per ton. 10
6. A man sold sixteen horses at $200 each; on one-half he gained 10 per cent. and on the other half he lost 10 per cent. Find net gain or loss. 20
7. Write a negotiable, interest-bearing promissory note, omitting signature. 20

GRAMMAR.

NOTE.—The commissioners will retain the following extract and dictate to all applicants as a test in orthography, penmanship, capitalization and punctuation.

1-2. Dictation (Webster's "Character of Washington.") "It was the extraordinary fortune of Washington, that having been intrusted in revolutionary times with the supreme military command, and having fulfilled that trust with equal renown for wisdom and valor, he should be placed at the head of the first government in which an attempt was to be made, on a large scale, to rear the fabric of social order on the basis of a written constitution, and of a pure representative principle." 20

3. Name and give examples of the different parts of speech used in the above extract. 10
4. Mark for pronunciation the following: Impolitic, deficit, simultaneous, coral, enervate, urgent, century, machine, sarcasm and oxygen. 10
5. Write an application for a position as teacher, stating qualifications and experience, and mentioning references. Use proper form of heading, superscription and closing. Be careful to paragraph, capitalize and punctuate properly. 20
6. What preliminary instruction should be given before grammar as a science is taught? 20
7. Analyze by diagram or otherwise, the above extract. 20

GEOGRAPHY.

1. What State is noted for the production of (*a*) rice; (*b*) gold; (*c*) silver; (*d*) sugar; (*e*) coal; (*f*) oranges; (*g*) tobacco; (*h*) marble; (*i*) zinc; (*j*) tar; (*k*) cotton; (*l*) copper; (*m*) wine; (*n*) petroleum, and (*o*) salt. 15
2. What counties in New York border on the great lakes? 10
3. Bound this State. 10
4. Mention six modifications of climate. 10
5. Name and locate five of the leading cities of Great Britain, mentioning a leading industry of each. 15
6. What determines the width of the zones? 20
7. Name the "five great powers" of Europe, and the form of government in each. 20

PHYSIOLOGY AND HYGIENE.

1. Describe three kinds of joints and mention one of each kind. 10
2. What is the object of respiration? Mention the principal organs of the respiratory system. 10
3. Name the bones of the skull. 10
4. In case of a wound, how may we determine whether the blood is flowing from a vein or an artery? If from the former, where should the bandage be applied? 15
5. What are stimulants? What are narcotics? Give an example of each. 15
6. Mention five hindrances to digestion. 25
7. Locate and describe the stomach. 15

GENERAL QUESTIONS.

1. Name (*a*) two American inventors;
   (*b*) two American lexicographers;
   (*c*) two American naturalists;
   (*d*) two American novelists;
   (*e*) two American historians;
   (*f*) two American poets;
   (*g*) two American journalists;
   (*h*) two American painters;
   (*i*) two American sculptors;
   (*j*) two American orators. 30
2. Classify the faculties of the mind. 20
3. Mention six objects of the recitation. 20
4. Who are the present United States Senators from this State? Who is your representative in Congress? 10
5. Locate the normal schools in this State. 20

AMERICAN HISTORY AND CIVIL GOVERNMENT.

1. What do the following dates suggest: 1497, 1534, 1541, 1565, 1607, 1609, 1620, 1623, 1651, and 1765? 20
2. How did we acquire Louisiana? When? From whom? 10
3. What was the principle of the "Monroe Doctrine?" 10
4. Mention a prominent battle of (*a*) the French and Indian war; (*b*) the Revolutionary war; (*c*) the war of 1812; (*d*) the Mexican war, and (*e*) the war of the Rebellion. 10
5. With what jury would a bill of indictment originate, and what jury would try the criminal? 10
6. How are United States Senators elected? Mention a State officer elected in the same manner. 20
7. Mention six distinct purposes for which the Constitution of the United States was adopted. 20

METHODS.

Outline a typical lesson for one of your grades in:

1. Language; 25
2. Physiology and Hygiene; 25
3. American History; 25
4. Reading. 25

SCHOOL LAW.

1. May a district change from one to three trustees? 20
2. What authority has a teacher to inflict corporal punishment? 20
3. What does the law require of a teacher before he can make a legal contract to teach a common school? 20
4. In whom is the authority vested to regulate the attendance of pupils, the course of study, and the selection of text-books? 20
5. How frequently does the law provide that the compensation of teachers shall become due and payable? 20

ALGEBRA.

1. Define coëfficient, polynomial, and exponent. 20
2. Expand $(a-5)^5$. 20
3. Factor a^5m-9am^3. 20
4. Divide \$183 between two men, so that $\frac{4}{7}$ of what the first receives will be equal to $\frac{3}{10}$ of what the second receives. 20
5. A person loaned \$100,000, a part of it at 5 per cent. and the balance at 4 per cent; his annual interest on the whole was \$4,640. Required the two parts of the principal. 20

ANSWERS FOR EXAMINATION, OCTOBER 1, 1887.

ARITHMETIC.

1. 109.12507.
2. 1716 L. C. M.; 13 G. C. D.
3. 373.37 $\frac{1}{7}$.
4. 40 5-63 per cent.
5. $11.71+
6. 32.32 loss.
7. Answer unnecessary.

GRAMMAR.

1–2. Answers unnecessary.

3. the.....article or adjective;
   was.....verb;
   fortune.....noun;
   of.....preposition;
   it.....pronoun;
   and.....conjunction;
   first.....adjective;
   having been intrusted.....particle or verb.
4. See any standard dictionary.
5. Answer unnecessary.
6. Language-lessons and actual composition work constitute the best means of acquiring a ready and correct use of language, which, in its turn, becomes a sound basis for the study of technical grammar. "As grammar was *made* after language," says Spencer, "so it ought to be *taught* after language."
7. Answer according to any recognized system or standard.

GEOGRAPHY.

1. (*a*) S. C.; (*b*) Cal.; (*c*) Nev.; (*d*) La.; (*e*) Penn.; (*f*) Fla.; (*g*) Ky.; (*h*) Vt.; (*i*) N. J.; (*j*) N. C.; (*k*) Miss.; (*l*) Mich.; (*m*) Cal.; (*n*) Penn.; (*o*) N. Y.
2. Chautauqua, Erie, Niagara, Orleans, Monroe, Wayne, Cayuga, Oswego and Jefferson.
3. Lake Erie, Niagara R., L. Ontario, St. Lawrence R., Dominion of Canada, L. Champlain, Poultney R., Vt., Mass., Conn., L. I. Sound, Atlantic O., Lower Bay, Raritan Bay, Staten I Sound, Newark Bay, Kill von Kull, N. Y. Bay, Hudson R., N. J., Delaware R., and Penn.
4. 1. Latitude;
   2. Altitude;
   3. Proximity to any great body of water;
   4. Ocean currents;
   5. Prevailing winds;
   6. Slope of surface.
5. London, S. E. part of England, on the Thames R.; manufactures clothing.
   Liverpool, western part of England on the Mersey R.; commercial pursuits.
   Glasgow, south-central part of Scotland on the Clyde R.; manufactures iron steamships.
   Birmingham, central part of England; manufactures hardware.
   Manchester, north-central part of England; manufactures cotton goods.

6. The inclination of the earth's axis.
7. Gt. Britain and Ireland; kingdom; limited monarchy.
   Germany; empire; limited monarchy.
   France; republic.
   Russia; empire; despotism.
   Austro-Hungary; empire; limited monarchy.

PHYSIOLOGY AND HYGIENE.

1. Immovable,—sutures of the skull, skull and upper jaw, etc.
   Slightly movable, vertebral column.
   Freely movable,—hip, carpus, etc.
2. To furnish oxygen to the blood, and remove carbonic acid.
   Lungs, larynx, trachea, bronchia, and air vesicles.
3. One Frontal, one Occipital, two Temporal, one Sphenoid, two Parietal, and one Ethmoid.
4. By its color, and by manner of its flow: venous blood is dark, and flows in a steady stream; arterial blood is light and flows in jets.
   Below the wound.
5. Stimulants are substances which excite. Narcotics stupefy.
   Alcohol taken in small quantity is a stimulant; opium is a narcotic.
6. 1. Eating too fast;
   2. Strong excitement;
   3. Great fatigue;
   4. Mental effort;
   5. Too much liquid with food.
7. It is a pear-shaped sac, lying obliquely across the body, immediately below the diaphraghm. That of an adult averages, when moderately full, twelve inches in length, (transversely), and four inches in breadth (vertically).

GENERAL QUESTIONS.

1. (*a*) Robt. Fulton and Samuel F. B. Morse;
   (*b*) Jos. E. Worcester and Noah Webster;
   (*c*) Jno. Jas. Audubon and Louis J. R. Agassiz;
   (*d*) Washington Irving and J. Fenimore Cooper;
   (*e*) George Bancroft and Jno. Lothrop Motley;
   (*f*) John G. Whittier and Henry W. Longfellow;
   (*g*) Jas. Gordon Bennett, Sr., and Horace Greeley;
   (*h*) Benjamin West and Gilbert Chas. Stewart;
   (*i*) Hiram Powers and Harriet Goodhue Hosmer;
   (*j*) Daniel Webster and Henry Ward Beecher.
   Others of good standing should be accepted.
2. The perceptive faculties, the retentive faculties, and the reflective faculties.

3. 1. Instruction imparted by the teacher;
   2. Mental training by the pupil;
   3. To induce study;
   4. To test preparation;
   5. To correct errors or mistakes;
   6. To form habits of attention, readiness and self-possession.
4. 1. William M. Evarts, Frank Hiscock. 2. Answer according to locality.
5. Albany, Buffalo, Brockport, Cortland, Fredonia, Geneseo, New Paltz, Oneonta, Oswego and Potsdam.

AMERICAN HISTORY AND CIVIL GOVERNMENT.

1. 1497, Cabot's discovery of the American continent;
   1534, Cartier's discovery of the St. Lawrence river;
   1541, De Soto's discovery of the Mississippi river;
   1565, Settlement of St. Augustine by the Spaniards under Melendez;
   1607, Settlement of Jamestown by the English;
   1609, Hendrik Hudson explored the river that now bears his name;
   1620, Landing of Pilgrims or Puritans at Plymouth, Mass.;
   1623, Actual settlement of New York by the Dutch;
   1651, Navigation Act passed. (Enforced in 1660.)
   1765, Stamp Act passed.
2. Purchased from France in 1803.
3. "The American continents are henceforth not to be considered subjects for future colonization by any European power."
4. (*a*) Quebec; (*b*) Saratoga; (*c*) New Orleans; (*d*) Buena Vista; (*e*) Gettysburg.
5. Grand jury; petit jury.
6. By joint ballot of the Legislature. Superintendent of Public Instruction.
7. 1. To form a more perfect union;
   2. To establish justice;
   3. To insure domestic tranquility;
   4. To provide for the common defence;
   5. To promote the general welfare;
   6. And to secure the blessings of liberty to ourselves and our posterity.

METHODS.

1–4. Answers unnecessary.

SCHOOL LAW.

1. Yes.
2. The same authority that a parent has.
3. It requires him to have an unexpired license.
4. In trustees and boards of education.
5. As often as at the end of each calendar month of the term of employment.

ALGEBRA.

1. A co-efficient is a number or letter prefixed to a quantity, to denote how many times the quantity is taken. A polynomial is an algebraic quantity consisting of more than one term. An exponent is a number written above and to the right of a quantity, to show how many times the quantity is taken as factor.
2. $a^5-5a^4b+10a^3b^2-10a^2b^3+5ab^4-b^5$.
3. $am\ (a^2-3m)\ (a^2+3m)$.
4. 1. $63; 2. $120.
5. $64,000 and $36,000.

QUESTIONS FOR EXAMINATION, NOVEMBER 5, 1887.

ARITHMETIC.

NOTE—All written work should be shown in full.

1. Write (*a*) three millions, sixty thousand, seven; (*b*) a number composed of 5 units of the sixth order, 4 units of the fifth order, 1 unit of the fourth order, and 9 units of the second order; (*c*) six thousand twenty-four hundred-thousandths. 12
2. (*a*) Divide $\frac{3}{4}$ of $\frac{5}{6}$ of $7\frac{1}{5}$ by $3\frac{2}{9}$; (*b*) subtract $8\frac{3}{16}$ from the sum of $5\frac{1}{3}$, $2\frac{1}{5}$, $4\frac{1}{12}$. 12
3. Find the interest of $94.75 from Aug. 14, 1886, to Oct. 1, 1887, at 6 per cent per annum. 12
4. Reduce (*a*) 39 sq. rods, 17 sq. yd., 119 sq. in. to sq. in.; (*b*) 3 pk., 5 qt. 1 pt. to the fraction of a bushel. 12
5. If lead pencils that cost 3 cts. each are sold for 5 cts. each, what is the per cent of profit. 12
6. The difference in time between New York and Chicago is 54 min. (*a*) What is the difference in longitude? (*b*)When the local time in New York is 12h. 25 m., A. M. what is the local time in Chicago? 20
7. Extract the square root of 317.815, correct to three decimal places. 20

GEOGRAPHY.

1. Name (*a*) the natural divisions of land; (*b*) the natural divisions of water. 12
2. Name and describe three of the principal rivers of the State of New York. 12
3. Name and locate (*a*) the chief commercial city of the U. S.; (*b*) of Great Britain; (*c*) of Brazil; (*d*) of Holland. 12
4. What form of government has (*a*) the United States? (*b*) Great Britain? (*c*) Russia? 12
5. What is (*a*) the source of a river? (*b*) its right bank? (*c*) a delta? 12
6. Name and locate the principal mountain range of (*a*) North America; (*b*) Europe; (*c*) Africa; (*d*)South America. 20
7. Bound by parallels the temperate zones of the earth. 20

METHODS.

1. In cold weather, what means would you use to ventilate a school-room unprovided with ventilating apparatus? 25
2. Outline a programme of recitations for use in an ungraded school, or in your department of a graded school. 25
3. How do you teach penmanship? 25
4. Give methods of controlling a school without recourse to punishment. 25

SCHOOL LAW.

1. What vacancies in office may the trustees of a school district fill by appointment? 20
2. What authority has a teacher over pupils on the way to and from school. 20
3. Upon what basis is the public school fund apportioned (*a*) to the counties of the State? (*b*) to the several school districts of a county? 20
4. What relatives is a trustee prohibited from hiring as teachers? 20
5. What power has the trustee of a school district to purchase globes, maps, and other school apparatus for the use of the school without a vote of the district? 20

PHYSIOLOGY AND HYGIENE.

1. Name the organs of circulation in order, beginning with the heart. 12
2. Mention three causes of decay of the teeth. 12
3. Explain how the blood circulates through the bones. 12
4. Describe the effect of alcohol on the lining of the stomach. 12
5. How many bones in the forearm? Name them. 12
6. Give three examples of reflex action. 20
7. Explain how an extensive burn may cause congestion of the lungs. 20

GENERAL QUESTIONS.

1. Name five of the leading newspapers of the United States. 20
2. Name the towns of your county, and also the county seat. 20
3. What centennial was celebrated in Philadelphia the week of September 11, 1887 20
4. What is the principal subject of dispute at the present time between the United States and Canada? 20
5. What is understood by "Authors' Day Exercises" in school work? 20

AMERICAN HISTORY AND CIVIL GOVERNMENT.

1. (*a*) Who discovered the Mississippi river? (*b*) the Hudson river? 15
2. Name the tribes of the Six Nations in their order of location from east to west. 15
3. Mention five of the principal events of the civil war. 10
4. Name the highest court and also the lowest courts of the State of New York. 10
5. How many persons comprize a trial jury in a court of record? 10
6. Explain what is meant by *impeachment* in the clause of the constitution, "shall have the sole power of impeachment." 20
7. What is meant by the *veto power?* 20

ALGEBRA.

1. By what signs are the terms of an algebraic expression of quantity separated? 20

2. Reduce $\frac{a^4 + 3a^2x + 3ax^2 + x^3}{a^3 + x^3}$ to its lowest terms. 20

3. Expand $(y - \frac{1}{3})^6$. 20

4. Divide $a^3 + 6a^2x^2 + x^4$ by $a^2 + 2ax + x^2$. 20

5. The product of two numbers is 45, and the difference of their squares is 56. Required the numbers. 20

GRAMMAR.

NOTE—The Commissioner will retain the following extract and dictate to all applicants as a test in Orthography, Penmanship, Capitalization and Punctuation.

1–2. Dictation (Art. XIV, sec. 1, Constitution of United States; 24

1. All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside.

2. No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law, nor deny to any person within its jurisdiction the equal protection of the laws.

3. Analyze by diagram or otherwise the first sentence. 12

4. Name (*a*) all the adjectives in the dictation exercises; (*b*) all the adverbs. 12

5. (*a*) Decline the pronoun he; (*b*) write the possessive forms of she, George, boys; (*c*) how is a declarative sentence made interrogative? 12

6. Analyze by diagram or otherwise the second sentence. 20

7. Name and parse all the relative pronouns used in the dictation exercise. 20

ANSWERS TO QUESTIONS FOR NOVEMBER, 1887.

ARITHMETIC.

1. (*a*) 3,060,007. (*b*) 541,090. (*c*) .06024.
2. (*a*) $1\frac{23}{58}$. (*b*) $3\frac{223}{240}$.
3. $5.36.
4. (*a*) 1,551,107 sq. in. (*b*) $\frac{59}{64}$ bu.
5. $66\frac{2}{3}$ per cent.
6. (*a*) 13° 30′. (*b*) 11 h. 31 min., P. M.
7. 17.827+.

GRAMMAR.

1–2. Answers unnecessary.

3. Answer according to any recognized system or standard.

4. (*a*) All, the, the, the, the, no, any, the, the, any, any, due, any, the, equal, the.
(*b* Thereof, wherein.

5. (*a*)

	Sing.	Plural.
Nominative,	he.	they.
Possessive,	his.	their or theirs.
Objective,	him.	them.

(*b*) Her; George's; boys'.
(*c*) By placing the verb or its first auxilliary before the subject.

6. Answer according to any recognized system or standard.

7. Which — relative pronoun; agrees with its antecedent, law, in person, number, and gender; nominative case, subject of the verb shall abridge.

GEOGRAPHY.

1. (*a*) Continent, Island, isthmus, peninsula, cape, promontory, mountain.
(*b*) Ocean, sea, gulf or bay, straight, channel, lake, river.

2. The Hudson river rises in the northeastern part of New York, and flows southerly into New York bay. The Mohawk river rises in the northern-central part of New York, and flows easterly into the Hudson. The Genesee river rises in the southwestern part of New York, and flows northerly into Lake Ontario.

3. (*a*) New York, on New York bay, in the southeastern part of the State of New York.
(*b*) London, in the southeastern part of England, on the Thames river.
(*c*) Rio Janeiro, in the southeastern part of Brazil on the Atlantic ocean.
(*d*) Amsterdam, in the western part of Holland, on the Zuyder Zee.

4. (*a*) Federal Republic. (*b*) Limited (or Constitutional) Monarchy. (*c*) Despotism, or Absolute Monarchy.

5. (*a*) The place where it rises or begins. (*b*) The bank on the right when going down the stream. (*c*) Land formed in and about the mouth of a river by deposits of earth washed down by the current.

6. (*a*) The Rocky Mountains, extending northwest and southeast in the western part. (*b*) The Alps, extending east and west in the southern-central part. (*c*) The Mountains of the Moon, extending north and south in the eastern part. (*d*) The Andes, extending north and south in the western part.

7. The North Temperate Zone is bounded on the north by the parellel of 66° 30′ north latitude, and on the south by the parellel 23° 30′ north latitude. The south temperate Zone is bounded on the north by the parellel 23° 30′ south latitude, and on the south by the parallel 66° 30′ south lotitude.

PHYSIOLOGY AND HYGIENE.

1. The heart, the arteries, the capillaries, and the veins.
2. Want of cleaning; breaking the enamel by biting hard substances; and cracking the enamel by taking into the mouth substances either very hot or very cold.
3. The blood flows from the arteries of the periosteum into the Haversian canals of the bone, and, if the bone is hollow, through into the blood-vessels of the marrow, then out again into the veins of the periosteum.
4. Alcohol first distends the blood-vessels, then hardens the membranes, and by continual use finally ulcerates them.
5. Two. The ulna and the radius.
6. The act of walking without mental effort; playing upon musical instruments, especially those that require the use of the fingers; the expert use of tools by skilled mechanics, etc.
7. By closing the perspiratory glands, and thus overworking the lungs in the effort to discharge through them the impurities of the body that naturally escapes through the skin.

GENERAL QUESTIONS.

1–2. No answers required.
3. The centennial of the adoption of the Constitution of the United States.
4. The fisheries question.
5. The practice in many schools of observing the birthday of any noted author, by reading and reciting from his writings.

AMERICAN HISTORY AND CIVIL GOVERNMENT.

1. (*a*) Fernando De Soto.
   (*b*) Hendrick (or Henry) Hudson.
2. Mohawks, Oneidas, Onondagas, Cayugas, Senecas, and Tuscaroras.
3. The capture of Fort Sumter; the battle of Bull Run; the battle of Gettysburg; the draft riots in New York city; and the Emancipation Proclamation, etc.
4. The Court of Appeals is the highest court, and Justices' Courts are the lowest.
5. Twelve.
6. An impeachment is a formal presentatien of charges against an official for misconduct in office, made by the lower branch of a legislative body.
7. The power of a chief executive officer to negative a law passed by a legislative body.

METHODS.

1–4. No answers required to be given here.

SCHOOL LAW.

1. District Clerk; District Librarian; and District Collector.
2. None.
3. (*a*) The number of schools taught by duly licensed teachers for the prescribed term of twenty-eight weeks, and upon the population as shown by the last census.

(*b*) The number of teachers employed for at least twenty-eight weeks in the preceding school year, the number of children of school age residing in the district on the 30th day of June, preceding, and the average attendance of resident pupils at the district school during the preceding school year.

4. Relatives within the second degree, either by blood or by marriage, viz.: father, mother grandfather, grandmother, son, daughter, grandson, granddaughter, brother, or sister.
5. He has power to expend for such purpose sums not to exceed fifteen dollars in any one school year.

ALGEBRA.

1. By the signs + and —.
2. $\frac{a^2+2ax+x^2}{a^2-ax+x^2}$, or $\frac{(a+x)^2}{a^2-ax+x^2}$.
3. $y^6-2y^5+\frac{5y^4}{2}-\frac{20y^3}{27}+\frac{5y^2}{27}-\frac{2y}{27}+\frac{1}{729}$.
4. $a^2-2ax+x^2$.
5. ± 9 and ± 5, or $\pm\sqrt{-25}$ and $\pm\sqrt{-81}$.

QUESTIONS FOR EXAMINATION, DECEMBER 3, 1887.

ARITHMETIC.

1. To what different classes of numbers does the number 924 belong? 12
2. What is the only even prime number? 12
3. Express by figures (*a*) four hundred and twenty-eight ten-thousandths; (*b*) nine hundred-thousandths. 12
4. How much will it cost to carpet a room 18 ft. square, with carpet 3-4 of a yard wide at $1.15 per yard? 12
5. A rectangular field is 86 1-2 rods long and 46.875 rods wide. How much wheat will it produce at the rate of 20 bushels per acre? 12
6. What sum of money will amount to $1,253.86, in 2 yr. 11 mo. 13 da., interest at 5 per cent.? 20
7. How is the rate per cent. per annum ascertained when the principal, interest, and time are given? 20

GEOGRAPHY.

1. Name the Great Lakes and the outlet of each. 15
2. Which one of the United States extends farthest east? which farthest west? 10
3. Name the principal river (*a*) of Alabama; (*b*) of Virginia; (*c*) of Pennsylvania; (*d*) of California; (*e*) of Indiana. 10
4. What is the principal vegetable product (*a*) of Minnesota? (*b*) of Virginia? (*c*) of Louisiana? (*d*) of Mississippi? (*e*) of Illinois? 15

5. Which grand division has (*a*) the highest mountains? (*b*) the largest river? (*c*) the largest lakes? 10
6. What are isothermal lines? 20
7. Upon what does the fertility of a large part of Egypt depend? 20

METHODS.

1. Give a plan for preventing tardiness at school. 25
2. Outline your method of teaching number in primary work. 25
3. Do you use the sentence method, the word method, or the alphabet method, in teaching reading, and what are its advantages over the other two? 25
4. Should false syntax be taught as a part of technical grammar? Why? 25

SCHOOL LAW.

1. (*a*) What notice to voters is necessary in calling a special school meeting? (*b*) What matters can be legally acted upon at such meeting? 20
2. (*a*) How may a school district change from three trustees to one? (*b*) From one trustee to three? 20
3. Has a trustee, or a board of trustees, the power to allow the use of the schoolhouse for religious meetings against the wish of the district? 20
4. How many days must elapse between the voting of a tax by a district meeting and the delivery of the tax-list and warrant to the collector? 20
5. Can a teacher make up lost time by teaching on a holiday? 20

PHYSIOLOGY AND HYGIENE.

1. Give the classification of the teeth and the number in each class for an adult. 12
2. Are rubber overshoes a healthful covering for the feet if constantly worn? Why? 12
3. Describe the effect of alcohol upon the digestive organs and the digestive fluids. 12
4. Distinguish between carbonaceous foods and nitrogenous foods. Give examples of each. 12
5. Describe and locate the tricuspid and the bicuspid valves. 12
6. Explain why persons after long or severe sickness are extremely sensitive to a jar. 20
7. Describe the need of ventilation and some of the causes by which the air in a room is polluted. 20

GENERAL QUESTIONS.

1. Name three State Educational Associations of the State of New York. 20
2. What international sailing contest took place in September, 1887? What nations were represented? What vessels participated? How many trials? Which won? 20
3. Name ten good books for a teacher's library, and give reasons for the selection. 20
4. Name the State officers elected in this State in 1887, giving the office to which each was elected and the date upon which his term of office begins. 20
5. Mention the leading manufactures of this country, and locate the principal manufacturing establishments. 20

AMERICAN HISTORY AND CIVIL GOVERNMENT.

1. Name some of the important inventions that have been made by Americans. 10
2. Name the two chief commanders of the American forces during the Mexican war. 10
3. What were the prime causes of the war of 1812? Who was President during that war? 20
4. Who discovered Florida, and why was the country so named? 15
5. What is meant by "a Congress of the United States?" 15
6. How are judges of the United States Supreme Court chosen? What is the length of their term of office? 15
7. When does the House of Representatives elect a President? How does it vote? 15

ALGEBRA.

1. Reduce to a mixed radical quantity $\sqrt[3]{128x^3\ 4z^4}$. 20
2. Express in the form of a radical quantity the product of $\sqrt[3]{x}$ multiplied by $4\sqrt{x}$. 20
3. Find the value of the unknown quantity in the equation $x^2 + 2x - 44 + \sqrt{x^2+2x-44} = 42$. 20
4. Given $x^3 + y^3 = 189$, and $x + y = 9$, to find the values of x and y. 20
5. Resolve $x^6 - y^6$ into four factors. 20

GRAMMAR.

NOTE.—The Commissioner will retain the following extract and dictate to all applicants as a test in Orthography, Penmanship, Capitalization and Punctuation.

1. The office of State Superintendent of Public Instruction is continued, and the term of said office shall be three years, commencing hereafter on the seventh day of April. Such Superintendent shall be elected by joint ballot of the senate and assembly, on the second Wednesday of February next preceding the expiration of the term of the then incumbent of said office, and on the second Wednesday of February next after the occurrence of any vacancy in the office. (Sec. I, Title I, chap. 555, Laws of 1864, as amended by sec. 1, chap. 591, Laws of 1886.) 15
2. Write the plural of (*a*) child; (*b*) armful; (*c*) brother-in-law; (*d*) axis; (*e*) memorandum. 10
3. What is the difference in meaning of the following expressions:
   The girls' books; or the girl's books? 10
4. Which parts of speech are compared? which declined? which conjugated? 10
5. Write three short sentences each containing a verb in the potential mood one of which shall denote power, another permission, and another necessity. 15
6. Analyze by diagram or otherwise: (*a*) I do not know what he wants. (*b*) Going home before the regular hour of dismissal should not be a frequent occurrence. 20
7. Write sentences in which the word "that" shall be used (*a*) as an adjective; (*b*) as a relative pronoun; (*c*) as a conjunction; (*d*) as a noun. 20

ANSWERS TO QUESTIONS FOR DECEMBER, 1887.

ARITHMETIC.

1. Even ; composite ; abstract ; integral.
2. Two.
3. (*a*) 400.0028 ; (*b*) .0009.
4. $55.20. $\frac{107}{128}$.
5. 506 107-128 bu.
6. $1,092.56.
7. Divide the given interest by the interest on the given principal, for the given time, at one per cent. per annum.

GRAMMAR.

1. No answer required.
2. (*a*) Children ; (*b*) armfuls ? (*c*) brothers-in-law ; (*d*) axes ; (*e*) memoranda.
3. "The girls' books" means books belonging to two or more girls. "The girl's books" means books belonging to one girl only.
4. Adjectives and adverbs are compared ; nouns and pronouns are declined ; verbs are conjugated.
5. Use *can* to denote power ; *may* to denote permission ; and *must* to denote necessity.
6. Answer according to any recognized system or standard.
7. (*a*) Do you see that man ? (*b*) The word that I gave will complete the sentence. (*c*) I know that he is here. (*d*) This that is poorly written.

GEOGRAPHY.

1. Lake Superior—outlet, St. Mary's river;
   Lake Michigan—outlet, Straits of Mackinaw;
   Lake Huron—outlet, St. Clair river;
   Lake Erie—outlet, Niagara river;
   Lake Ontario—outlet, St. Lawrence river.
2. Maine extends farthest east; Oregon, farthest west.
3. (*a*) Alabama river; (*b*) James river; (*c*) Susquehanna river (*d*) Sacramento river; (*e*) Wabash river.
4. (*a*) Wheat ; (*b*) tobacco ; (*c*) sugar cane ; (*d*) cotton ; (*e*) corn.
5. (*a*) Asia ; (*b*) South America ; (*c*) North America.
6. Imaginary lines upon the earth's surface representing the localities having the same average temperature.
7. Upon the annual overflow of the Nile.

PHYSIOLOGY AND HYGIENE.

1. Incisors—eight in number; canines—four in number; bicuspids—eight; and molars—twelve.
2. No. They prevent perspiration by causing the moisture to accumulate instead of allowing it to escape as nature designs.
3. The continued use of alcohol dilates the blood vessels, hardens the membranes, and weakens the absorbents; it also absorbs and retains the moisture from the digestive juices, coagulates and precipitates the pepsin, and changes the condition and power of the bile.
4. Carbonaceous foods contains much carbon, and produce animal or vital heat in a large degree; they are less valuable as producers of tissue and muscle. Examples—fat meat, sugar, etc. Nitrogenous foods mainly produce or form tissues and muscles. Examples—Cheese, lean meat, whites of eggs, etc.
5. The tricuspid valve consists of three folds of membrane in the opening from the right auricle into the right ventricle, and the bicuspid valve of two folds of membrane in the opening from the left auricle into the left ventricle. These valves are so arranged that the blood may pass freely into the ventricles, but they close the opening if the blood sets back toward the auricles.
6. The fats, tissues and cartilages that form the packing for the joints have been largely absorbed, and sickness has prevented their replacement by assimilation of food; hence a jar causes a concussion to the bones, not observed in health.
7. Fresh air is needed to purify the blood as it passes through the lungs, and to carry off the exhalations from the body.

   Air in a room is polluted by breathing, by perspiration, by lights or fires, and, in general, by any cause that exhausts the oxygen, and generates carbonic acid gas.

GENERAL QUESTIONS.

1. The New York State Teachers' Association; The New York State Association of School Commissioners and City Superintendents; The University Convocation of the State of New York, etc.
2. The contest for the America's cup; the British and the American; the Scotch yacht Thistle, and the American yacht Volunteer; two; the Volunteer.
3. No answer required.
4. See newspapers. Jan'y 1, 1888.
5. Answer according to locality.

AMERICAN HISTORY AND CIVIL GOVERNMENT.

1. No answer required.
2. Gen. Winfield Scott and Gen. Zachariah Taylor.
3. The impressment of American seamen by the British; the right to search American vessels, claimed by the British government and denied by the American; and the severe restrictions placed upon American commerce, by the British government. James Madison.

4. Ponce de Leon. From its beautiful foliage and blossoming trees, (Florida meaning *flowery.*)
5. The members of the House of Representatives are chosen every even year for the term of two years, and each such term is called "a Congress."
6. They are appointed by the President and confirmed by the Senate. During life or good behavior.
7. When no candidate has received a majority of the electoral vote of the United States. It votes by States, each state being entitled to one vote.

METHODS.

No answers required.

SCHOOL LAWS.

1. (*a*) A notice specifying when and for what purpose the meeting is called, to be given to each voter personally, or to be left at his place of residence if he cannot be found, at least five days before the time designated for the meeting; (*b*) only those fully set forth in the notice.
2. (*a*) By resolution adopted by a majority vote at an annual school meeting; (*b*) by a resolution adopted by a two-third vote at an annual school meeting.
3. A sole trustee has that power, and a board of trustees has that power if no one of its members dissents.
4. Thirty days.
5. He can if he have the consent of the trustees thereto; otherwise he cannot.

ALGEBRA.

1. $4xy\sqrt[3]{2yz}$.
2. $4\sqrt[6]{x^5}$.
3. $x=8$.
4. $x=5$ or 4; $y=4$ or 5.
5. $(x+y)(x-y)(x^2-xy+y^2)(x^2+xy+y^2)$.

QUESTIONS FOR EXAMINATIONS, JANUARY 7, 1888.

Second and Third Grades.

A. M.

NOTE.—The marks for absolutely correct answers are noted on the right hand of questions —a lesser number of credits may be allowed according to nature of answers given.

ARITHMETIC.

1. The product of three factors is $20\frac{3}{4}$, and two of them are respectively $1\frac{3}{5}$ and $4\frac{5}{8}$. Required, the third factor. 10
2. If I sell goods for $511.29, and thereby gain $9\frac{1}{4}$ per cent. of their cost, how much is my gain? 10
3. Upon what general principle of division is cancellation founded? 10
4. What is the cube root of a number? 10
5. Divide 48 bu. 3 pk. 6 qt. by 9. 10
6. What per cent. of $78\frac{5}{6}$ is $236\frac{1}{2}$? 10
7. Divide $800 among A, B, and C, so that A shall receive $75 more than B, and B shall receive $68 more than C. 10
8. A policy of insurance cost $28, at a rate of $\frac{7}{8}$ per cent. Find the face of the policy. 10
9. A box 6 ft. by $3\frac{1}{2}$ ft. by 2 ft. 8 in. will hold how many bushels of wheat? 10
10. Reduce .04675 mi. to yds. 10

GEOGRAPHY.

1. (*a*) What large gulf on the western coast of Africa? (*b*) What large river flows into it? 10
2. (*a*) Which pole is now in darkness? (*b*) When did it pass into darkness? 10
3. To what European government does Greenland belong? Cuba? The Bermudas? 10
4. What rivers unite to form the Ohio? the Missouri? 10
5. Which of the grand divisions are peninsulas? Which is composed of islands? 10
6. What are great circles of a sphere? Small circles? 10
7. Name the islands known as the Greater Antilles. 10
8. Name five important cities on the line of the New York Central R. R. 10
9. Locate the principal salt works of New York. 10
10. Define—water-shed; isthmus; foot-hills; cañon; peninsula. 10

CIVIL GOVERNMENT.

1. What is the term of office in the State of New York of (*a*) the Governor? (*b*) State Senators? (*c*) Members of Assembly? (*d*) State Treasurer? (*e*) Superintendent of Public Instruction? 20
2. (*a*) Explain the difference between an election by a majority and an election by a plurality. (*b*) Which is required for election of a School Commissioner? 20

3. If a State has seven electoral votes, how many members of the House of Representatives has it? 20
4. What is the title of the chief executive officer of (*a*) the United States? (*b*) a State? (*c*) a county? (*d*) a town in this state? (*e*) a city? (*f*) a village? (*g*) a school district? 20
5. What officials are elected by the legislature of this State on joint ballot? 20

DRAWING.

1. What is geometric drawing? 10
2. Define perspective. 10
3. Draw an outline of a cube. 20
4. Draw a triangle; a circle; a parallelogram; an ellipse; an oval. 30
5. Show the application of compound curves in drawing the outline of a pitcher; of a vase. 30

P. M.

COMPOSITION.

Write a letter to a trustee of a school district, applying for a position as teacher, and giving age, experience, educational qualifications and references as to character and ability. 75

(See directions for remaining 25 per cent. of credits. Punctuation and Capitalization.)

GRAMMAR.

1. Name the classes and the modifications of verbs. 10
2. Change the expression, "One of his friends told him of the arrangement," to the passive form. 10
3. Compare (*a*) happy; (*b*) near; (*c*) worse; (*d*) straight; (*e*) beautiful. 10
4. Write the feminine of (*a*) nephew; (*b*) hero; (*c*) baron; (*d*) benefactor; (*e*) Paul. 10
5. Which should be first taught, construction or analysis? Why? 10
6. Write (*a*) five nouns that have no plural; (*b*) five that have no singular. 10
7. Give the principal parts of the following verbs: (*a*) blow; (*b*) break; (*c*) freeze; (*d*) cast; (*e*) pay. 10
8. Define a complex sentence. 10
9. Write sentences containing (*a*) an infinitive phrase; (*b*) a verb in the potential mood, past tense; (*c*) a relative clause; (*d*) a substantive clause; (*e*) a noun used as an attribute. 10
10. Analyze, by diagram or otherwise,—(*a*) We preferred to remain at home. (*b*) To venture in was to die. (*c*) Green is the sod and cold the clay. (*d*) He looked mild and gentle. 10

PHYSIOLOGY AND HYGIENE.

1. Mention four common causes of colds. 20
2. What artery carries dark blood, and what vein bright red blood? 20
3. What causes vital heat? 20
4. What is meant by the expression, the right and the left heart? 20
5. What is the difference between the material of the bones of a child and those of an adult. 20

AMERICAN HISTORY.

1. By what people was New York settled? When? Where? 20
2. Name the presidents of the United States who have died during their term of office, and the successor of each. 20
3. What accessions of territory have the United States secured? From whom obtained? How? 20
4. Where was Fort DuQuesne located? Fort Ticonderoga? Fort Necessity? Fort Erie? 20
5. What incidents are recalled by the names,—(*a*) Cherry Valley? (*b*) Yorktown? (*c*) Saratoga? (*d*) Shiloh? (*e*) Appomattox? 20

READING.

To be supplied by the Commissioner.

CURRENT TOPICS.

1. Give a short account of Bismarck. 20
2. What event of great political importance to France transpired during the past month? 20
3. What important legislative body convened on the 5th of December, 1887? 20
4. What were the fates of the seven anarchists who were convicted of complicity in the bomb-throwing at Chicago in 1886? 20
5. Name three educational journals of this State, and state where each is published. 20

ANSWERS TO QUESTIONS FOR JANUARY 7, 1888.

ARITHMETIC.

1. $2\frac{119}{148}$.
2. $53.29.
3. Dividing both dividend and divisor by the same number does not affect the value of the quotient.
4. One of the three equal factors that will produce the number.
5. 5 bu. 1 pk. 6 qt.
6. 300 per cent.
7. A receives $339.33\frac{1}{3}$; B, $264.33\frac{1}{3}$; C, $196.33\frac{1}{3}$.
8. $3,200.
9. $45\frac{1}{2}$ bu.
10. 82.28 yd.

GEOGRAPHY.

1. (*a*) Gulf of Guinea. (*b*) The Niger.
2. (*a*) The north pole. (*b*) Sept. 22, 1887.
3. Greenland belongs to Denmark, Cuba to Spain, and the Bermudas to Great Britain.
4. The Allegheny and the Monongahela; the Jefferson, the Madison and the Gallatin.
5. South America and Africa; Oceanica.
6. A great circle of a sphere divides the surface of the sphere into two equal parts—Ex. The equator and the meridian circles. A small circle of a sphere divides the surface into two unequal parts—Ex. The parallel circles.
7. Cuba, Hayti, Porto Rico, and Jamaica.
8. Albany, Utica, Syracuse, Rochester, and Buffalo
9. Near Syracuse, and near Warsaw, Wyoming Co.
10. A water-shed is the ridge or elevation between two bodies of water. An isthmus is a narrow piece of land connecting two larger bodies. Foot-hills are the elevations that are found on approaching mountains. A cañon is a deep, rocky gorge in the mountains. A peninsula is a portion of land largely surrounded by water.

CIVIL GOVERNMENT.

1. (*a*) Three years. (*b*) Two years. (*c*) One year. (*d*) Two years. (*e*) Three years.
2. (*a*) A majority is more than one-half of all the votes cast, while a plurality is more votes than any other candidate receives. (*b*) A plurality only.
3. Five.
4. (*a*) President. (*b*) Governor. (*c*) Sheriff. (*d*) Supervisor. (*e*) Mayor. (*f*) President of the village. (*g*) Trustee.
5. United States Senators, Superintendent of Public Instruction, and Regents of the University.

DRAWING.

1. Geometric drawing is the representation, upon a plane surface, of geometric forms, with respect to their corresponding dimensions.
2. Perspective is the appearance that any object presents to the eye, with respect to form, lights, and shadows.

3, 4, 5. No answers required.

COMPOSITION.

No answers required.

SPELLING AND CAPITALIZATION.

No answers required.

PENMANSHIP.

See paper on Geography.

GRAMMAR.

1. Classification:—Finite and infinite—Subject relation. Transitive and intransitive—object relation. Regular and irregular—forms of past tense. Modifications:—Voice, mood, tense, person, number.
2. He was told of the arrangement by one of his friends.
3.

	Positive.	Comparative.	Superlative.
(*a*)	happy	happier	happiest
(*b*)	near	nearer	nearest
(*c*)	bad	worse	worst
(*d*)	straight	(cannot logically be compared.)	
(*e*)	beautiful	more beautiful	most beautiful

4. (*a*) Niece; (*b*) heroine; (*c*) baroness; (*d*) benefactress; (*e*) Pauline.
5. Construction. Construction is composition; analysis is essentially criticism.
6. Examples—(*a*) Business; gold; peace; sleep; hunger—(*b*) Stairs; suds; clothes; assets; tidings.
7.

	Present.	Past.	Past Participle.
(*a*)	blow	blew	blown
(*b*)	break	broke	broken
(*c*)	freeze	froze	frozen
(*d*)	cast	cast	cast
(*e*)	pay	paid	paid

8. A complex sentence is a sentence that is composed of two or more clauses, one of which modifies some part of another clause.
9. Examples—(*a*) I wish *to hear* from you—(*b*) He *could read*—(*c*) I was introduced to the lady *whom you saw there*—(*d*) I did not know *that he was present*—(*e*) Thou art the *man*.
10. No answers required.

PHYSIOLOGY AND HYGIENE.

1. No answer required.
2. The pulmonary artery carries dark blood from the heart to the lungs, and the pulmonary vein carries red blood from the lungs to the heart.
3. The chemical action of the oxygen in the blood, upon the tissues in the capillaries.
4. The right auricle and right ventricle taken together are known as the right heart, *i. e.*, the right side of the heart—and the left auricle and left ventricle as the left heart.
5. The bones of the child have a larger proportion of cartilage to the mineral matter than have those of an adult.

AMERICAN HISTORY.

1. By Hollanders, in 1615, on the present sites of New York and Albany.
2. William Henry Harrison, succeeded by John Tyler. Zachary Taylor, succeeded by Millard Fillmore. Abraham Lincoln, succeeded by Andrew Johnson. James A. Garfield, succeeded by Chester A. Arthur.

3. The Louisiana territory, obtained from the French by purchase; Florida, obtained from Spain by purchase; Texas, formerly a part of Mexico, annexed upon a vote of its people; California, Nevada, Utah, Arizona, New Mexico, and part of Colorado, obtained from Mexico by purchase, and in the settlement of the Mexican war; Alaska, obtained from Russia by purchase.
4. Fort DuQuesne was located on the present site of Pittsburgh; Fort Ticonderoga, on Lake Champlain; Fort Necessity, nearly south of Pittsburgh, in a pass in the Alleghany mountains, near the southern boundary of Pennsylvania; Fort Erie, on the west side of Niagara river, near Lake Erie.
5. (*a*) The great massacre by the Indians; (*b*) the surrender of Cornwallis; (*c*) the surrender of Burgoyne; (*d*) the great battle of Shiloh or Pittsburgh Landing, during the Civil war; (*e*) the surrender of the army of Northern Virginia, under Lee, to Gen. Grant.

CURRENT TOPICS.

1. No answer required.
2. The resignation of President Grevy, and the subsequent election by the French Assembly of President Carnot.
3. The fiftieth congress of the United States.
4. Four were hanged, the sentences of two were commuted to imprisonment for life, and one committed suicide.
5. No answer required.

QUESTIONS FOR EXAMINATION, FEBRUARY, 1888.

A. M.

ARITHMETIC.

1. Divide 312.5 by .625. 10
2. Define (*a*) greatest common divisor; (*b*) common multiple. 10
3. Required the cost of 3,000 pounds of oats at 35 cts. per bushel (New York standard). 10
4. Find the square root of 3, correct to three decimal places. 10
5. Find the difference and the product of 17 1-6 and 11 3-4. 10
6. Multiply 3 bu. 3 pk. 3 qt. by 27. 10
7. Reduce 14-23 A. to integers of lower denominations. 10
8. What is the true present worth of $977.60, due 3 mo. 20 da. hence, discounted at the rate of 6 per cent. per annum. 10
9. 25 per cent. of the selling price of an article is profit. Required the per cent. of gain on its cost. 10
10. Find the diameter of a circle 165 feet in circumference. 10

GEOGRAPHY.

1. Name and locate the five largest cities in this State.
2. There are ten seas in and around Europe; name them.
3. Name, in order, the ten States that touch Mississippi River, beginning at its source.
4. Name four States in which coal is found in abundance.
5. Describe the shortest all-water route from New Orleans to Borneo.
6. On what geographical circle are the days and nights always of equal length?
7. Why is the climate of Northern Europe warmer than that of North America in the same latitude?
8. Name (*a*) the three most northerly counties of this State; (*b*) The most easterly county; (*c*) The most southerly county; (*d*) The most westerly county.
9. Name and locate five large European cities.
10. Name the largest river of Africa that flows westerly.

CIVIL GOVERNMENT.

1. Mention one duty of each of the following officers: (*a*) Justice of the Peace; (*b*) Supervisor; (*c*) County Clerk; (*d*) Member of Assembly. 40
2. How is a Supervisor elected? For how long time? 20
3. Mention two duties of the District Clerk, and two of the Collector. 20
4. What is the chief duty of the Lieutenant-Governor of this State? 10
5. How is the number of members of the United States Senate determined? 10

DRAWING.

Examinations in Drawing will be omitted until after summer vacation.

P. M.

COMPOSITION.

1. Should A. S. Draper, Superintendent of Public Instruction, ask you for your opinion, fully and freely expressed, of the comparative merits of the system of Uniform Examinations for Commissioners' Certificates and the system formerly practiced, what would be your reply? (Write out a copy of your letter to him, complete as to form and matter.)

   Orthography, 10; Punctuation, 10; Form, 10; Correctness and propriety of language, 25. 55
2. Write a sentence, using the word "*flowed*," and another, using the word "flown." 10
3. Write a sentence using the word "struck," and another, using the word "stricken." 10

GRAMMAR.

Old Time, in whose bank we deposit our notes,
Is a miser who always wants guineas for groats;
He keeps all his customers still in arrears
By lending them minutes and charging them years.—*Holmes.*

1. Mention the principal and the subordinate clauses in the first two lines of the above extract.
2. State the modifiers of Time.
3. What are the simple subjects of all the clauses in the entire selection? What are the simple predicates?
4. Give case of *bank, miser, customers, minutes, them.*
5. Parse *lending.*
6. Give the four principal parts of the verbs *sit* and *lay.*
7. Illustrate by examples three different uses of the apostrophe.
8. Illustrate by sentence the use of the *subjunctive mood.*
9. Write a sentence containing a clause used as an object.
10. Write a sentence having an infinitive used as subject.

PHYSIOLOGY AND HYGIENE.

1. (*a*) Of how many parts is the vertebral column composed? (*b*) What common name is applied to all the parts? 20
2. (*a*) Where is the spinal cord located? (*b*) In what part of the spinal cord is the *grey matter?* 20
3. Explain why cleanliness of the skin is conducive to health? 20
4. What is the office of the saliva, (*a*) in mastication? (*b*) in digestion? 20
5. What argument would you employ to convince a man of his error, if he used alcoholic drinks, believing he would thereby be better able to endure exposure in cold weather? 20

AMERICAN HISTORY.

1. Give name and location of each of the five tribes of Indians known as the Iroquois. 30
2. Mention three oppressive acts of the British Parliament which are considered causes of the American Revolution. 15
3. Name the Atlantic States which were among the original thirteen States. 25
4. Name three prominent Centennial Celebrations, by the people of the United States, and give the date of each. 20
5. What State is called the "Centennial" State? Why so called? 10

READING.

To be supplied by the Commissioner.

CURRENT TOPICS.

1. What Territory desires to be divided and admitted to the Union as States? 20
2. Mention one important recommendation in the last Message of the President. 20
3. Name the Associate Justice of the Supreme Court nominated by the President and confirmed by the Senate the present session. 20
4. What was the recommendation of the Commission to the present Legislature on the mode of executing the death penalty? 20
5. With what great national measure is Gladstone identified? 20

ANSWERS TO QUESTIONS FOR FEBRUARY, 1888.

ARITHMETIC.

1. 500.
2. (*a*) The greatest number that is an exact divisor of two or more given numbers. (*b*) Any number of which two or more given numbers are exact divisors.
3. $32.81 1-4.
4. 1.732+
5. Difference, 5 5-12; product, 201 17-24.
6. 103 bu. 3 pk. 1 qt.
7. 97 sq. rd. 11 sq. yd. 7 sq. ft. 92 8.23 sq. in.
8. $960.
9. 33 1-3 per cent.
10. 52 ft. 6 in.

GEOGRAPHY.

1. New York, at the mouth of the Hudson; Brooklyn, on the west end of Long Island; Albany, on the west bank of the Hudson; Rochester, on the Genesee river; Buffalo, on Lake Erie.
2. White, Caspian, Black, Marmora, Archepelago, Adriatic, Mediterranean, Irish, North, Baltic.
3. Minnesota, Wisconsin, Iowa, Illinois, Missouri, Kentucky, Tennessee, Mississippi, Arkansas, Louisiana.
4. Four of the following: Pennsylvania, Ohio, Indiana, Illinois, Maryland, West Virginia, Virginia.
5. Through Gulf of Mexico, across the Atlantic, around Cape of Good Hope, and through the Indian Ocean.
6. The Equator.
7. Because of the Gulf Stream and the prevalence of westerly winds.
8. (*a*) St. Lawrence, Franklin, Clinton; (*b*) Suffolk; (*c*) Richmond; (*d*) Chautauqua.
9. Any five of the following: London, on the Thames; Paris, on the Seine; Liverpool, on the Mersey; St. Petersburgh, on the Neva; Berlin, on the Spree; Vienna, on the Danube; Frankfort, on the Oder; Rome, on the Tiber.
10. The Niger.

CIVIL GOVERNMENT.

1. (*a*) To issue his warrant for the arrest of persons charged with crime. (*b*) To hold and pay out the public school moneys upon the order of school trustees. (*c*) To record deeds, mortgages, etc., in the proper books kept in his office. (*d*) To assist in making new laws and in revising old ones.
2. By the voters of the town at the annual town meeting, for one year.
3. To record the proceedings at each school meeting, and to issue notices of such meetings. To collect school taxes, and to hold moneys raised by tax until ordered to pay them out by the school trustee.
4. To preside over the sessions of the senate.
5. There are two elected from each of the thirty-eight States of the Union.

COMPOSITION.

No answers required.

SPELLING AND CAPITALIZATION.

No answers required.

PENMANSHIP.

See paper on Geography.

GRAMMAR.

1. Principal clause: *Old Time is a miser.* Subordinate clauses: (*a*) *In whose bank we deposit our notes;* (*b*) *Who always wants guineas for groats.*
2. Time is modified by (*a*) the adjective *old;* (*b*) the adjective clause, *in whose bank we deposit our notes;* (*c*) the predicate noun (attribute) *miser.*
3. Simple subjects: (*a*) *Time,* (*b*) *we* (*c*) *who* (*d*) *he.* Simple predicates: (*a*) *is miser;* (*b*) deposit; (*c*) wants; (*d*) *keeps.*
4. (*a*) Bank, *objective case;* (*b*) miser, *predicate nominative;* (*c*) customers, *objective case;* (*d*) minutes, *objective case;* them, *objective case.*
5. *Verb;* principal parts, *lend, lent,, lending, lent; irregular; transitive; participle; present tense;* also used like a noun, *objective case,* object of the preposition *by.* Note.—Some would simply say: *Present participle* and object of *by.*
6. *Sit, sat, sitting, sat.*
   Lay, laid, laying, laid.
7. *John's* book; *'Tis* true; He does not pronounce his *r's.*
8. *If* he *had gone,* I would have remained.
9. The sentinel said: "*Who goes there?*" Or, He thought *that he would go.*
10. "*To die* for one's country is sweet and glorious."

PHYSIOLOGY AND HYGIENE.

1. (*a*) 24. (*b*) Vertebræ.
2. (*a*) It extends through the middle of the spinal column. (*b*) The inner part.
3. It keeps the pores free from obstruction, giving free exit for excretions.
4. (*a*) It softens and lubricates the food. (*b*) It changes starch to sugar.
5. Though the circulation would be stimulated, causing him to feel warmer at first, a reaction would ensue and he would suffer more from cold than if he abstained from the use of the stimulant.

AMERICAN HISTORY.

1. Mohawks, Oneidas, Onondagas, Cayugas and Senecas. Mohawks in territory centering in Herkimer county, and the others in the counties bearing their several names.
2. Navigation act. Importation act. Stamp act.
3. New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia.
4. The Centennial Exposition, 1876. Yorktown, 1881. The adoption of the Constitution, 1887.
5. Colorado. Because it was admitted to the Union in 1876.

CURRENT TOPICS.

1. Dakota.
2. Reduction of the revenue by removing the tax from certain articles.
3. L. Q. C. Lamar.
4. That in cases of capital punishment, death by electricity be substituted for death by hanging.
5. With home rule in Ireland.

QUESTIONS FOR EXAMINATION, MARCH 3, 1888.

Second and Third Grades.

A. M.

ARITHMETIC.

1. Find the prime factors of 72, 80 and 96; select from all these factors those whose product will give the L. C. M. of 72, 80 and 96. 10
2. A cubic foot of water weighs 62.356 pounds; silver is 10.511 times heavier than water; find the weight of 2 1-3 cubic feet of silver. 10
3. What part of an acre is 7-20 of a square rod? Express the answer decimally. 10
4. What will it cost to fill a jug, which contains 2,310 cubic inches, with vinegar at seven cents a quart? 10

5. Five men do as much work as eight boys; what per cent of a man's work does a boy accomplish? What per cent of a boy's work does a man accomplish? 10
6. Draw—on a separate slip of paper— (1) a note which shall be (2) negotiable, its (3) face, seventy-five dollars, its (4) time, six months, its (5) maker, John Doe, its (6) payee, Richard Roe, its (7) date, Jan. 3, 1888, its (8) place of payment, at the First National Bank of Albany, (9) not bearing interest. Properly indorse it to John Jones. 20
7. Find the proceeds of the note above described, discounted at a bank January 3, 1888. 20
8. Express in proper form a true proportion whose extreme shall be nine feet and $22.50. 10

GEOGRAPHY.

1. Name the lakes on which the following villages are situated, respectively: (1) Plattsburgh, (2) Penn Yan, (3) Cooperstown, (4) Geneva, (5) Canandaigua. 10
2. In what river basins are the following cities located, respectively: (1) Toronto, (2) Minneapolis, (3) Salem, (4) Trenton, (5) Hartford? 10
3. Name three states and two territories that border on Nebraska. 10
4. What is the latitude and longitude of a point that is 180°, measured on a great circle, from a point that is north latitude 40° and west longitude 70°? 10
5. Name five countries bordering on the Argentine Republic or Laplata. 10
6. Into what bodies of water do the following rivers flow, respectively: Loire, Dwina, Ganges, Brazos, Merrimac? 10
7. Name the bodies of water in which the following islands are located, respectively: Jamaica, Anticosti, Mauritius, Isle of Man, Gothland. 10
8. Name five seas that touch Russia in Europe. 10
9. What is a delta? How do deltas grow? Name three large rivers that have large deltas. 10
10. What river basin has the most luxuriant vegetable growth of any on the American continent? Give two causes for this. 10

CIVIL GOVERNMENT.

1. What is the title of the presiding officer of the House of Representatives? How is he chosen? 10
2. What is the title of the presiding officer of the United States Senate? How is he chosen? 10
3. Which of the president's cabinet is charged with administration of foreign affairs? 10
4. Why should the constitution forbid the passage of an *ex post facto* law? 10
5. What is the highest military title in our country? 10
6. How are governors of territories appointed? 10
7. What is a congressional district? 10
8. Why is greater honor attached to the office of state senator than to that of member of assembly? 10
9. What limitations do the national and state constitutions place upon the appointing powers of the chief executives? 10
10. In what way do the national and state constitutions make chief executives responsible for legislation? 10

P. M.

COMPOSITION.

1. Write a description of a lake which you have visited, or which you may have imagined yourself to have visited, referring to the following points of interest: Location, dimensions, basin, outlet, navigation, fisheries, surrounding scenery, other points that may occur to you.

Completeness with which the subject is treated.	15
Clearness of the description.	15
Grammatical correctness of language.	15
Use of capitals and punctuation.	15
Orthography and general appearance.	15

For remaining 25 per cent see directions. (Punctuation and capitalization.)

GRAMMAR.

1. Conjugate the verb "*go*" in the subjective present. 10
2. Write the possessive plural of the following nouns: *Woman, fox, sheep, turkey, lady.* 10
3. Write the possessive irregular of the following pronouns: *It, she, I, which, whosoever.* 10
4. Write the comparative form of each of the following adjectives and adverbs: *Evil, well, little, nigh, hind.* 10
5. Write a sentence containing a relative pronoun in the objective case. 10
6. Analyze the following sentence: "And he called one of the servants and asked what these things meant." Express your analysis by diagram or otherwise. 10
7. In the above sentence, what is the object of the verb "*asked?*" Of the verb "*meant?*" 10
8. Explain the syntax of "*that*" in the following sentence: "A man of polite imagination is let into a great many pleasures that the vulgar are not capable of receiving." 10
9. Explain the syntax of "*capable*" in the same sentence. 10
10. Explain the syntax of "*receiving*" in the same sentence. 10

PHYSIOLOGY AND HYGIENE.

1. Describe the mucous membrane. 10
2. Where is the larynx located? 10
3. How are the tones of the voice modulated, as to pitch? 10
4. What exchange of gases takes place in the lungs? 10
5. Describe the aorta. 10
6. Name five fluids which are agents in digesting the food. 20
7. What fluid contains pepsin? What office is performed by the pepsin? 10
8. What effect is supposed to be produced upon the pepsin when alcohol is taken into the stomach? 10
9. Describe the pia mater. 10

AMERICAN HISTORY.

1. Of what church were the earliest settlers of Maryland? Of Pennsylvania? 10
2. What circumstances led to the colonization of Rhode Island? 10
3. By what war did Great Britain acquire Canada? 10
4. In what body was the general government of the colonies lodged during the American revolution? 10
5. Why was the battle of Saratoga so important in its consequences? 10
6. What brilliant victory is associated with the name of Oliver Hazard Perry? In what way was that victory gained? 10
7. By what war did the United States make the largest acquision of territory? What states and territories have since been formed of this territory? 20
8. Who were the respective commanders of the Union and Confederate forces in the battle of Antietam? Of Gettysburg? 20

READING.

To be supplied by the commissioner.

CURRENT TOPICS.

1. What illustrious American scientist died in January, 1888? 10
2. What famous English actor is now in America? 10
3. What publication relating to school affairs is soon to be sent to every school district in this State? 10
4. State some fact or incident of which you have read relating to a great storm in Dakota or Nebraska. 10
5. What is the name of the great Irish leader in the British parliament? 10
6. What is, probably, the question to be most discussed in the approaching presidential campaign? 10
7. What distinguished woman astronomer is a professor in one of our American colleges? What is the name of the college referred to?
8. Why is the freshman Class at Cornell larger than any previous class? 10
9. What two changes have recently been made in the president's cabinet? 10
10. Describe an eclipse that has occurred this year. 10

ANSWERS TO QUESTIONS FOR MARCH 3, 1888.

1. $72 = 2 \times 2 \times 2 \times 3 \times 3$, $80 = 2 \times 2 \times 2 \times 2 \times 5$, $96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$. L. C. M. of 72, 80 and $96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5$.
2. 1529.3286+ pounds.
3. .000072+
4. $2.80.
5. $62\frac{1}{2}\%$, 160%.
6. Answer not needed.
7. $72.71.
8. Answers, various.

GEOGRAPHY.

1. (1) Champlain, (2) Keuka, (3) Otsego, (4) Seneca, (5(Canandaigua.
2. (1) St. Lawrence, (2) Mississippi, (3) Columbia, (4) Delaware, (5) Connecticut.
3. Iowa, Missouri, Kansas, Colorado; Dakota and Wyoming.
4. S. Lat. 40°, E. Lon. 110°.
5. Chili, Bolivia, Uruguay, Brazil, Paraguay.
6. Bay of Biscay, White Sea, Bay of Bengal, Gulf of Mexico, Atlantic Ocean.
7. Caribbean Sea, Gulf of St. Lawrence, Indian Ocean, Irish Sea, Baltic Sea.
8. White Sea, Baltic Sea, Black Sea, Sea of Azov, Caspian Sea.
9. A triangular piece of land between two mouths of the same river. Deltas are formed by deposits of earth carried down by the river. Third answer, various.
10. The basin of the Amazon: because of the warm climate and abundant rains.

CIVIL GOVERNMENT.

1. The Speaker; by the Members of the House.
2. The Vice-President; by electors chosen by the people.
3. The Secretary of State.
4. Because it would be unjust to condemn a man for violating a law not in existence at the time the act was committed.
5. General.
6. By the President with the approval of the Senate.
7. A portion of a State entitled by law to send a representative to Congress.
8. Because he represents a much larger constituency, and he is elected for a longer term.
9. His appointments must be approved by the Senate.
10. It gives them the power of veto.

COMPOSITION.

Answers cannot be prepared.

GRAMMAR.

1. Singular,—if I go, if thou go, if he go. Plural,—if we go, if you go, if they go.
2. Women's, foxes', sheep's, turkeys', ladies'.
3. Its, her, my, or mine, whose, whosoever.
4. Worse, better, less, nigher, hinder.
5. Various answers.
6. Answer not needed.
7. What these things meant. What.
8. In the objective case after receiving.
9. It belongs to Vulgar.
10. In the objective case after of.

PHYSIOLOGY AND HYGIENE.

1. It is a continuation of the skin of a more delicate texture, lining the alimentary canal and all the cavities opening from it.
2. At the upper extremity of the wind pipe.
3. By stretching or relaxing the vocal cords.
4. Oxygen of the air enters the blood and carbonic acid in the blood enters the air.
5. It is the great artery that conducts the purified blood from the left ventricle of the heart.
6. Saliva, gastric juice, bile, pancreatic juice, intestinal fluid.
7. The gastric juice. It dissolves the albuminoids of the food.
8. It is supposed to coagulate it.
9. It is a membrane enveloping the brain, protecting it and distributing blood to the brain through its many blood vessels.

AMERICAN HISTORY.

1. The Roman Catholic, the Quaker Church.
2. The banishment of Roger Williams from Massachusetts for heresy.
3. The French and Indian war.
4. The continental congress.
5. Because it led to the surrender of Burgoyne and that event led to the recognition of the United Colonies as a nation by France.
6. The naval victory on Lake Erie in the war of 1812.
7. By the Mexican war, California, Nevada, Colorado, Texas, Utah, Arizona, New Mexico.
8. McClellan and Lee, Meade and Lee.

CURRENT TOPICS.

1. Prof. Gray.
2. Irving.
3. The Code of Public Instruction.
4. Various answers.
5. Parnell.
6. The tariff question.
7. Maria Mitchell, Vassar College.

8. Because of a new law in relation to free scholarship allowing substitutes from districts not otherwise represented.
9. Mr. Vilas has been transferred to the charge of the interior department and Mr. D. Dickinson has been appointed in his place.
10. A total eclipse of the moon occurred on the evening of January 28.

QUESTIONS FOR EXAMINATIONS, MARCH 13 and 14, 1888.

First Grade.

Tuesday, A. M.

ARITHMETIC.

1. Express by words 234,506.234. 10
2. State the principles that you would teach in multiplication. 10
3. State two principles that you would teach in greatest common divisor. 10
4. Given, the dividend, quotient, and remainder, to find the divisor, state the process. 10
5. Given, rate, time, and interest, to find principal. State rule or formula. 10
6. Define (*a*) the unit of a fraction; (*b*) a fractional unit. 10
7. Define (*a*) ratio; (*b*) proportion. 10
8. A ship's chronometer, set at Greenwich, points to 5 h. 40 min. 20 sec. P. M. when the sun is on the meridian. What is the ship's longitude? 10
9. What is the difference between the true and the bank discount of $950 for three months, at 7 per cent? 10
10. A rectangular park, the sides of which are respectively 45 rods and 60 rods long, has a walk crossing it from corner to corner. How long is the walk? 10

GEOGRAPHY.

1. What nation controls the Suez canal? What waters does it connect? 10
2. Name five valuable articles of commerce exported from Africa. 10
3. Through what waters would a ship pass in going from the city of Buffalo, the most direct way, to the Atlantic ocean? 10
4. Name three important lines of railroad over which you may pass from Chicago to San Francisco. 10
5. Name a city where the days and nights are exactly equal throughout the year. 10
6. Name ten cities located in the following counties of this State: Chautauqua, Oneida, Broome, Monroe, Dutchess, Kings, Ulster, Chemung. 10
7. Name five countries of Europe bordering on the Mediterranean sea. 10
8. Locate the Philippine Islands; the Sandwich Islands. 10
9. Define *plateau; water-shed.* 10
10 If an isothermal line were drawn from the east coast of North America through the British islands to Norway, where would it be in highest latitude, in America, in Great Britain, or in Norway? Where would it be in lowest latitude? 10

Tuesday, P. M.

COMPOSITION.

1. Write a sentence, using the word *rise*, and another, using the word *raise*. 10
2. Write a sentence, using the word *done*, and another, using the word *set*. 10
3. Write a description of some industry, or a branch of some industry, with which you are well acquainted, speaking of (1) *its location and advantages of location;* (2) the history of the factory or establishment; (3) the condition of the workmen or employees; (4) the benefits or injury it brings to the vicinity in which it is located.

   Credits as follows:

For correctness of form and language.	10
For correctness of punctuation.	10
For correctness of spelling, and capitals.	10
For excellence of composition.	25
As provided in general regulations.	25

GRAMMAR.

You hear that boy laughing? You think he's all fun;
But the angels laugh, too, at the good he has done;
The children laugh loud as they troop at his call,
And the poor man that knows him, laughs loudest of all. — *O. W. Holmes.*

1. Which are the principal clauses? 10

   NOTE. – In naming a clause, it is sufficient to give only simple subject and simple predicate.
2. Name the subordinate clauses, indicating whether they are *adjective*, *adverbial*, or *objective*. 10
3. Write synopsis of *hear*, *i. e.*, give first person, singular, in the *indicative mode*, *passive voice*. 10
4. Parse *laughing* and *fun*. 10
5. Illustrate by sentences two different uses of *what*, and explain their use grammatically. 10
6. Name five offices of a noun that a clause may perform. 10
7. Illustrate, by sentences, the above uses. 10
8. Write a sentence containing a *participle*, an *adverb*, a *verb in the passive voice*, and a *relative pronoun*. Underline the parts indicated above. 10
9. Write a sentence having a *participle* modifying the subject, and an *infinitive* used as the object of a verb. 10
10. In the sentence, *He wanted Miss Smith to lend him her pencil*, what is the object of wanted.

PHYSIOLOGY AND HYGIENE.

1. Name three functions or offices of the skin. 10
2. Name the vessels by which the blood passes from the right side of the heart to the left. 10
3. What danger is there in encouraging children to walk at too early an age? 10
4. Why do alcoholic stimulants make the stomach feel well? Why not use them for that purpose? 10
5. Of what use is the hair that grows in the nostrils? Of what use is the ear wax? 10
6. Why does a hot foot bath relieve headache? 10
7. Describe a ball and socket joint and give two examples. 10
8. What is the name of the poisonous element in tobacco? 10
9. What substance in the body is harder than bone? 10
10. What is chyle? 10

CIVIL GOVERNMENT.

1. What legal requirement must county officers comply with before entering upon the duties of their offices? 10
2. What is a deed? A mortgage? 10
3. What is the highest United States court? Of how many judges is it composed? 10
4. In which branch of Congress must bills for raising revenue originate? 10
5. What is the fundamental law of this State? Of the United States? 10
6. What is meant by the "elective franchise?" Name two classes who are wholly deprived of it. 10
7. State two similarities existing between the government of this State and that of the United States. 10
8. What is the difference in the manner of choosing the judges of the courts of this State, and those of the United States courts? 10
9. Where does the treaty-making power in the United States Government reside? 10
10. What is a corporation? Name two kinds. 10

Wednesday, A. M.

AMERICAN HISTORY.

1. Of what nationality was De Soto? What discovery did he make? 10
2. Why was Virginia thus named, and where was its first settlement? 10
3. In what colony and in what year was slavery introduced into the United States? 10
4. Who was William Penn? What State did he found? 10
5. Give the names of three persons prominent in inciting the colonists to rebel against England. 10
6. Name four distinguished generals who afterward became Presidents of the United States. 10
7. What was the Emancipation Proclamation? When and by whom was it issued? 10
8. With what nation have we a treaty restricting immigration? 10

9. Name two distinguished foreigners who assisted the colonists during the Revolutionary War. 10
10. Give a brief sketch of the life of (*a*) Lincoln; (*b*) Seward. 10

ALGEBRA.

1. Define Algebra. Define an equation. 10
2. State the axiom that applies to the transposition of a term from one member of an equation to the other. 10
   (*a*) When the term is a positive quantity;
   (*b*) When the term is a negative quantity.
3. Explain the difference between the two algebraic expressions, $a + \frac{b-c}{x}$ and $a - \frac{b-c}{x}$. 10
4. Show that $-y\,(m-x) = (x-m)\,y$. 10
5. Prove that $\frac{-a^3}{-a} = a^2$. 10
6. $\frac{a^3+b}{b^4} \times \frac{a-b}{3} = ?$ 10
7. $\frac{a^4}{y^3} \div \frac{a^3}{y^2} = ?$ 10
8. Find the value of the unknown quantity in the equation $\frac{x^3}{3} + \frac{x}{5} = 20 - \frac{x}{4}$. 10
9. Find two numbers whose sum is 40 and whose difference is 16. *Give full solution.* 10
10. A boatman who can row 12 miles per hour in still water, is 7 hours in rowing to a certain point up the river, and 5 hours in returning. At what rate per hour does the river flow? *Give full solution.* 10

CURRENT TOPICS.

1. What is the name of the presiding officer of the Senate of this State? Of the Assembly? 10
2. What portion of our State Capitol has been condemned as unsafe? Why? 10
3. Name two territories which are asking for admission to the Union, as States. 10
4. In what cities respectively are the two great political parties to hold their next national convention? 10
5. What is the principal feature of the Crosby Bill? 10
6. What Englishman is known as the "grand old man?" 10
7. What important educational bill has recently passed the United States Senate? 10
8. What interoceanic canal is now in process of construction? 10
9. What brave act did Miss Freeman, a western teacher, recently perform? 10
10. Who is the oldest monarch of Europe? 10

Wednesday, P. M.

BOOK-KEEPING.

1. Rule form of (*a*) day book? (*b*) ledger. 20
2. James Miller bought of us on account, March 10, 1888, 10 lb. sugar at 7½ cts., 2 bu. potatoes at 60 cts., 50-lb. sack of flour, $1.70, 3 bars of soap, 25 cts., ½ lb. tea at 80 cts., and ½ gal. N. O. molasses at 90 cts. March 14, 1888, he pays us on account $2.50.
   Enter the foregoing in the ruled form of day book and post to the ruled form of ledger. 40
3. If A and B keep accounts with each other, the items on the Cr. side of the account kept by B will be found where in the account kept by A? 10
4. What cash items are entered in the Dr. column of the cash-book? 10
5. What is meant by *the book of original entry.* 10
6. We receive $25 of Amos Brown this day and place. Write him a receipt for the same. 10

SCHOOL LAW.

1. Who is at the head of the school affairs of the State? Of the county? Of the school district? Of the school-room? 20
2. State briefly the provisions of the law of 1887 relative to the employment and pay of teachers. 20
3. What is the salary of a School Commissioner? How may it be increased? 20
4. State within what degree of relationship is a trustee prohibited from employing a teacher, except by vote of a district meeting. 20
5. State the provisions of the new law in respect to school out-buildings. 20

PHYSICS.

1. By diagram illustrate two kinds of levers. 10
2. How many valves are necessary for a common lifting pump? In which direction do they open? 10
3. Define *impenetrability* and *inertia.* 10
4. Upon what principle does a common thermometer indicate changes of temperature? 10
5. Why will cold water poured upon a hot stove lid be likely to break it? 10
6. When you invert a tumbler full of water covered with a paper, what sustains the water? 10
7. Why does a teaspoon standing in a tumbler of water appear bent? 10
8. What causes dew? 10
9. Why will smoke rise more readily on some days than on others? 10
10. Why will shavings ignite more readily than large pieces of wood? 10

METHODS.

1. Explain your method of teaching beginners to read. 20
2. What is the synthetic method of teaching Geography? 20

3. Explain the process of dividing one fraction by another. 20
4. What results should be secured by map-drawing? 20
5. State two good rules to be observed in criticising pupils in class-work. 20

ANSWERS TO QUESTIONS FOR MARCH 13 AND 14, 1888.

First Grade.

ARITHMETIC.

1. Two hundred thirty-four thousand, five hundred six, and two hundred thirty-four thousandths.
2. (*a*) The multiplier must be regarded as an abstract number.
   (*b*) The multiplicand and product must be like numbers.
   (*c*) Either of the factors may be used as multiplicand or multiplier when both are abstract.

3–4. Any two of the five following:
   (*a*) A common divisor of two numbers is an exact divisor of their sum.
   (*b*) A common divisor of two numbers is an exact divisor of their difference.
   (*c*) An exact divisor divides any number of times its dividend.
   (*d*) The greatest common divisor of two or more numbers contains all the prime factors of those numbers and no others.
   (*e*) The greatest common divisor of two numbers is either their difference or some factor of their difference.

5. Divide the given interest by the interest of $1, or by the rate on $1, for the given time at the given rate.

6–7. See text-books.

8. 85° 5′ west.
9. 29 cents.
10. 75 rd.

GEOGRAPHY.

1. Great Britain. The Mediterranean Sea and Red Sea.
2. Any five from the following: gold, ivory, gums, valuable woods, ostrich feathers, palm oil, spices, sugar, diamonds, wool, hides.
3. Lake Erie, Welland Canal, Lake Ontario, St. Lawrence River, Gulf of St. Lawrence.
4. Northern Pacific, Central Pacific, Southern Pacific.
5. Quito.
6. Dunkirk, Jamestown, Utica, Rome, Binghamton, Rochester, Poughkeepsie, Brooklyn, Kingston, Elmira.
7. Spain, France, Italy, Turkey, Greece.
8. Philippine Islands, in the Pacific ocean, off the coast of China; Sandwich Islands, in the Pacific Ocean, west of North America.

9. A plateau is an elevated plain; a water-shed is a ridge or divide between two river basins
10. Its latitude would be highest in Norway and lowest in America.

COMPOSITION.

Answers to questions on composition admit of so much variety that it would not be practicable to furnish them.

GRAMMAR.

1. You hear; You think; angels laugh; children laugh; man laughs.
2. He's fun, *objective;* (which) he has done, *adjective;* as they troop, *adverbial;* that knows, *adjective.*
3. Indicative mood:

Present tense,	I am heard.
Past tense,	I was heard.
Future tense,	I shall (will) be heard.
Present perfect tense,	I have been heard.
Past Perfect tense,	I had been heard.
Future perfect tense,	I shall (will) have been heard.

4. Laughing is a verb; regular, transitive by addition of *at*, active voice, participle, or participial mode, present tense, used like an adjective, modifies the noun *boy.*
   Fun is a noun, common, third person, singular number, neuter gender, predicate noun, (attribute) and agrees with the subject, *he* in the nominative case.
5. No answer furnished as so many are possible.
6. (*a*) Subject of verb.
   (*b*) Object of verb.
   (*c*) Object of preposition.
   (*d*) Appositive.
   (*e*) Attribute (noun in predicate).
7. Examples:
   (*a*) "*Who goes there?*" was said by the sentinel.
   (*b*) He said, "*I will go.*"
   (*c*) The success of the expedition depends upon *Who the commander is.*
   (*d*) He gave the answer "*I am sorry.*"
   (*e*) The fact is *that he did not study.*
8. Example: "The traveler *being pressed closely* by the dog, *which* seemed to grow more vicious, turned quickly and threw his hat at him, by which the cur *was* completely *terrified.*"
9. Example: John preferring to play, did not study.
10. Object: *Miss Smith to lend him her pencil.*

PHYSIOLOGY AND HYGIENE.

1. Protection, excretion, absorption.
2. Pulmonary arteries, pulmorary capillaries, pulmonary veins.

3. The danger that the legs will become crooked because the bones are then so flexible.
4. Because they intensify the vital action and flow of blood. Because this unnatural stimulation leads to overaction and disease.
5. It protects the nasal cavity from dust and any other substance that might be drawn in with the breath. It protects the ear drum from insects.
6. Because it causes the blood to circulate freely in the lower extremities and so relieve congestion of the blood in the brain.
7. It consists of a socket at the end of one bone, and a ball fitting into it at the end of the other bone, the shoulder-joint and the hip-joint.
8. Nicotine.
9. The enamel of the teeth.
10. It is the food after it has undergone the processes of digestion.

CIVIL GOVERNMENT.

1. They must take the oath of office.
2. A conveyance of the ownership of land by one party to another, etc. An instrument giving security upon property for the payment of money due.
3. The Supreme Court. Nine.
4. House of Representatives.
5. The Constitution of the State of New York. The Constitution of the United States.
6. Freedom to vote at all elections where qualified by law. Any two of the following: Minors. Persons convicted of State prison offenses. Indians not taxed. Aliens.
7. No definite answer can be given here.
8. In this State they are elected by the people, except in case of vacancy in office. In the United States they are appointed by the President and confirmed by the Senate.
9. With the President and Senate.
10. A society of persons authorized by law to transact business as an individual.

AMERICAN HISTORY.

1. A Spaniard. The Mississippi river.
2. After the "Virgin Queen" of England, at Jamestown.
3. Virginia, 1619.
4. A celebrated English Quaker. Pennsylvania.
5. No definite answer can be given here. Patrick Henry, Joseph Otis, Samuel Adams, etc.
6. Washington, Jackson, Taylor, and Grant.
7. A proclamation declaring all the slaves, in the United States, free wherever the people were in rebellion. 1863; Abraham Lincoln.
8. China.
9. Any two of the following: LaFayette, Kosciusko, Pulaski, or Steuben.
10. No answer can be given here to this, as all answers will vary.

ALGEBRA.

1. No answer required here.
2. (*a*) If equals be subtracted from equals, the remainder will be equal.
   (*b*) If equals be added to equals, the sums will be equal.
3. In the expression $a + \frac{b-c}{x}$ the quotient of $b - c$ divided by x is to be added to a; and in the expression $a - \frac{b-c}{x}$ the quotient of $b - c$ divided by x is to be subtracted from a.
4. $-y \times (m - x) = -my + xy$; and $(-m + x) \times y = (x - m)\,y$.
5. $-a^3 \div +a^1 \quad -a^2$; but the minus sign before the divisor shows that the quotient, $-a^2$ is to be subtracted; and $-(-a^2) = +a^2$ or a^2.
6. $\frac{a^4 + ab - a^3b - b^2}{3b^4}$
7. $\frac{a}{y}$
8. $x = 25\frac{25}{47}$
9. Let x the greater number, and $40 - x$ the less.
   $x - (40 - x) = 16$
   $2x - 40 = 16$
   $2x = 16 + 40$
   $x = 28$, the greater number, and
   $40 - 28 = 12$, the less number.
10. Let x miles = the rate per hour the river flows.
    7×12 mi. $= 7x$ mi. = distance up the river, and
    5×12 mi. $+ 5x$ mi. = distance down the river.
    $7 \times 12 - 7x = 5 \times 12 + 5x$
    $12x = 24$, and $x = 2 =$ mi. per hour.

CURRENT TOPICS.

1. Edward F. Jones; Fremont Cole.
2. The ceiling of the Assembly chamber. Because the stone supports were not strong enough to support the weight.
3. Dakota, Utah and Montana.
4. Chicago and St. Louis.
5. High license to restrict the liquor traffic.
6. Gladstone.
7. The Blair Educational Bill.
8. Nicaragua ship canal.
9. By tying thirteen children, her pupils, together, she conducted them to a place of safety, during a terrific storm that destroyed the school house; the weather was exceedingly cold.
10. The emperor of Germany.

BOOK-KEEPING.

1. No answer required.
2. No answer required.
3. They will be found on the Dr. side.
4. Items of cash received.
5. The book in which an item of account is first entered.
6. Answer according to any well established form.

SCHOOL LAW.

1. State Superintendent. School Commissioner. Trustee. Teacher.
2. The Trustee must give the teacher a written minute of the terms agreed on, signed by trustee; the pay of teacher shall be due and payable at least as often as at the end of each calendar month.
3. The salary is $1,000, with $200 audited by the Supervisors for expenses. By Board of Supervisors.
4. Second.
5. See the law in the school register.

PHYSICS.

	First class.	Second class.	Third class.
1.	W. P. △ F	F. ▽ W. P.	F. ▽ P. W.

2. Two—Upward.
3. Impenetrability, that property of matter in virtue of which no two bodies can occupy the same space at the same time. Inertia, that property of matter in virtue of which a body cannot set itself in motion, nor when in motion can it stop itself.
4. That mercury contracts and expands regularly by change in temperature.
5. It causes one side to expand, and thus the brittle iron is broken in bending.
6. The upward pressure of the air.
7. The rays of light in passing from the water to the air are refracted.
8. Principally, the lowering of the temperature after sundown causes condensation of the moisture of the air in contact with a substance that readily radiates its heat. It depends also upon the amount of moisture in the air.
9. The air is heavier when the smoke rises readily.
10. The shavings are poor conductors of heat and retain it.

METHODS.

1. For 1, 3, 4, and 5, no answers are required to be given here.
2. The synthetic method of teaching Geography, begins with what the child can see at home and in the school-room, and goes from there to the town, county, etc., gradually reaching out to the world as a whole.

QUESTIONS FOR EXAMINATION, MARCH 13, 1888.

Second and Third Grades.

A. M.

ARITHMETIC.

1. Give the dividend, 807, and the quotient, $34\frac{1}{3}$. Find the divisor. 10
2. If the first, third, and fourth terms of a proportion are given, how may the second term be found? 10
3. What are the proceeds of a 90 da. note for $500 discounted at a bank at the rate of 6 per cent. per annum? 10
4. Why does the value of a decimal remain unchanged when ciphers are annexed? 10
5. A square field contains 20 acres. Required the number of rods of fence to inclose it. Carry the answer only to one decimal place. 10
6. A commission merchant sold 900 pounds of turkeys at 23 cents per pound, and retained for his services $10.35. What rate of commission did he charge? 10
7. In what time will $125 amount to $145.75, at 6 per cent., simple interest? 10
8. 14 A. 10 sq. rd. is what part of 50 A. 100 sq. rd.? 10
9. Find the cost of 2,315 pounds of coal at $5.75 per ton. 10
10. A merchant failed, and paid his creditors 55 cents on the dollar. If he paid in all $3,874.75, what was the amount of his indebtedness? 10

GEOGRAPHY.

1. Name the five principal tributaries of the Mississippi. 10
2. What form of government has Russia? England? France? Mexico? Brazil? 10
3. In what zones is North America? Africa? 10
4. What mountain range on the boundary between France and Spain? Between Norway and Sweden? Between Russia and Siberia? Between Thibet and Hindostan? Only two of the four ranges required. 10
5. Name five principal river boundaries of the United States? 10
6. Mention the zones of the earth, giving the width of each in degrees. 10
7. Name five lakes that discharge their waters through the Oswego river. 10
8. What is the most direct water-way from New York to Culcutta? 10
9. What are the principal agricultural productions of this country? 10
10. Mention two cities of New York on the New York, Lake Erie and Western R. R. 10

CIVIL GOVERNMENT.

1. In what way does the United States Government secure funds with which to meet its expenses. 20
2. How many members of the Assembly in this State? Of the State Senate? How many members of the United States Senate? 20
3. What officials constitute a *town board* in this state? 20
4. Give two legal qualifications necessary to make a man eligible to the office of U. S. Senator? 20
5. How is a vacancy in the office of member of Congress filled? 20

P. M.

COMPOSITION.

1. Give two rules for the use of the period. 10
2. Give rule for the punctuation of direct quotations, and give example. 10
3. Write a formal letter to the Commissioner of your district, setting forth five reasons why you consider yourself qualified to teach school. 55

(See regulations for remaining 25 per cent. of credits.)

GRAMMAR.

1. Write sentences containing adverbs of (*a*) time; (*b*) place; (*c*) manner; (*d*) degree; (*e*) negation. Underscore each and also the word it modifies. 10
2. Give the principal parts of the verbs ride, sit, see, write, and chose. 10
3. Compare all the words that admit of comparison in the following couplet:

   "How far that little candle throws its beam!
   So shines a good deed in a naughty world." 10
4. What class of verbs has no passive voice? Write a sentence to illustrate. 10
5. Classify the clauses in the sentence, "And God said, 'let there be light,' and there was light," stating whether they are principal or subordinate. 10

NOTE.—In naming a clause, it is sufficient to include only simple subject and simple predicate.

6. Parse the word *what* in the sentence, *This is precisely what was necessary.* 10
7. Write sentences containing verbs in the potential mood denoting (*a*) power; (*b*) necessity; (*c*) permission. 10
8. Write five abstract nouns. 10
9. What is a finite verb? 10
10. Which moods can be used in the interrogative form? Which cannot be so used? Illustrate. 10

PHYSIOLOGY AND HYGIENE.

1. Why does severe physical or mental labor immediately after eating hinder digestion? 20
2. Define two of the following: plasma; fibrin; clot; serum. 20
3. What veins are provided with valves? 20
4. Describe the peristalic movement of the stomach. 20
5. Should ice-water be taken during a meal? Why? 20

AMERICAN HISTORY.

1. In what branch of warfare did the Americans particularly distinguish themselves in the War of 1812? 20
2. What people claim to have discovered America before the time of Columbus? 20
3. What effect had the Colonial wars upon the Revolutionary struggle? 20
4. Name two battles of the Mexican war and the commander of the American troops in each. 20
5. Name the eleven States that formed the Confederacy in the war of the rebellion? 20

CURRENT TOPICS.

1. What nation threatens the peace of Europe at the present time? What part of its policy is considered aggressive? 20
2. What has been done with the Blair educational bill at this session of Congress? 20
3. Of what is oleomargarine made? 20
4. What educational gathering is to convene at Watkins, N. Y., July 5, 1888. 20
5. Give some account of the condition of the Crown Prince, Frederick William, of Prussia. 20

READING.

To be supplied by the Commissioner.

ANSWERS TO QUESTIONS FOR MARCH 13, 1888.

Second and Third Grades.

ARITHMETIC.

1. $23\frac{52}{103}$.
2. By dividing the product of the first and fourth terms by the third term.
3. $492.25. (On the basis of 30 days to the month. Exact interest is of course correct.)
4. Annexing a cipher to a decimal diminishes the size of the units in the same proportion that it increases the number of units; or
   It multiplies both numerator and denominator by the same number.
5. 226.27 + rd.
6. 5 per cent.
7. 2 yr. 9 mo. 6 da.
8. $\frac{5}{18}$.
9. $6.66.
10. $7045.

GEOGRAPHY.

1. Red river; Arkansas river; Ohio river; Missouri river; Des Moines river.
2. Absolute monarchy. Constitutional monarchy. Republic. Federal republic. Constitutional monarchy.
3. North Frigid, North Temperate and Torrid. North Temperate, Torrid, and South Temperate.
4. Pyrenees. Scandinavian. Ural. Hyamalaya.
5. St. Lawrence river; St. John's river; St. Croix river; Rio Grande river; Colorado river; Niagara river; etc.

6. North Frigid,—23½° wide.
   North Temperate,—43° wide.
   Torrid,—47° wide.
   South Temperate,—43° wide.
   South Frigid,—23½° wide.
7. Oneida, Owasco, Cayuga, Seneca, Keuka,—and others.
8. Via Atlantic ocean, Mediterranean sea, Suez canal, Red sea, Indian ocean and Bay of Bengal.
9. Answer according to location.
0. Binghamton and Elmira, (Hornellsville, incorporated March, 1, 1888.)

CIVIL GOVERNMENT.

1. Principally, by collecting duties on imported goods, and by taxing the manufacture and sale of tobacco and spirituous liquors.
2. 128 Members of Assembly. 32 State Senators. 76 United States Senators.
3. Supervisor, Justices of the Peace, and Town Clerk.
4. Age, 30 years at least; nine years a citizen of the U. S.; a resident of the State he is elected to represent.
5. The Government of the State issues a special writ of election, and the electors of the district act thereunder.

COMPOSITION.

1. A period should be placed after every declarative or imperative sentence; after every abbreviation not fully noted by marks of elision; and after Roman numerals.
2. Every direct quotation should be set off by commas.
3. No answer required.

GRAMMAR.

1. No answer required.
2. Ride — rode — riding — ridden.
   Sit — sat — sitting — sat.
   See — saw — seeing — seen.
   Write — wrote — writing — written.
   Choose — chose — choosing — chosen.
3. Far — farther — farthest.
   Little — less — least.
   Good — better — best.
   Naughty — naughtier — naughtiest.
4. Intransitive verbs.
5. Principal clauses, *God said, there was light.* Subordinate clause, *Let there be light.*
6. Relative pronoun — third person — singular number — neuter gender, nominative case in predicate with verb *is*, and nominative case, subject of the verb *was*.
7. No answer required.
8. No answer required.
9. One that does not predicate the act or state of a subject.
10. Indicative and potential. Imperative and subjunctive.

PHYSIOLOGY AND HYGIENE.

1. The blood required to stimulate the digestive organs is drawn by the physical or mental exertion, to the muscles or the brain.
2. Plasms,—the thin colorless liquid that comprises the great bulk of the blood.
   Fibrin,—an ingredient of the blood that hardens when the blood escapes from the veins or the arteries.
   Clot,—hardened fibrin mixed with corpuscles, and useful in being nature's means in stopping hemorrhages.
   Serum,—a clear yellow liquid remaining after a blood clot has formed.
3. The larger vein that conducts blood upward when the body is in an erect position.
4. The peristaltic movement is the peculiar churning movement caused by the contraction, alternately, of the longitudinal and circular fibres of the muscle that forms one of the coats of the stomach.
5. No. The low temperature of the water checks the flow of the digestive juices, and thus retards digestion.

AMERICAN HISTORY.

1. In naval warfare.
2. The Scandinavians, or Northmen.
3. The colonial wars had developed a military spirit among the colonists, and had educated many of their officers in the art of war, thus better fitting the colonists to cope with the British troops.
4. Answer unnecessary.
5. Virgina, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas and Tennessee.

CURRENT TOPICS.

1. Russia. The massing of troops adjacent to the frontiers of Germany, Austria, and Turkey.
2. It has passed the Senate and been sent to the House of Representatives.
3. Principally of the fat of animals.
4. New York State Teachers' Association.
5. He is suffering from a throat disease generally believed to be a cancerous affection of the larynx and trachea. His physicians have inserted a tube through his neck into his trachea for him to breath through.

QUESTIONS FOR SPECIAL EXAMINATION, MARCH, 1888.

Second and Third Grades.

A. M.

ARITHMETIC.

NOTE.—In the solution of these problems, every process must be indicated. Mere answers will not be accepted.

1. Write 1249 in Roman notation. 10
2. The product of two numbers and one of the numbers given to find the other number. State the process and give reason for it. 10
3. What is cancellation? For what purpose is it used? 10
4. Reduce $4\frac{1}{14} \div 17\frac{8}{9}$ first to a common fraction, and then to a decimal true to two places. 10
5. Phelps & Co. bought of Barber & Perkins 15 reams paper at $4, and 20M. envelopes at $2.70. Make out a bill and receipt it properly. 10
6. Reduce $\frac{7}{9}$ of a mile to integers of lower denominations. 10
7. A man failing in business had only $2,100. He owed $6,000. What per cent. would his creditors recieve? 10
8. Find the interest on $475 for 1 year, 3 months, 24 days at 6 per cent. 10
9. What is the present value of a note for $750, due 1 year 6 months hence, at 6 per cent., without interest? (True discount.) 10
10. Bought 4 loads of hay, weighing 2,750 lbs. each, at $20 per ton, and gave my note, without interest, at 60 days to pay it. What are the proceeds of the note, if discounted at a bank at 6 per cent? 10

GEOGRAPHY.

1. Name and locate (*a*) the metropolis, (*b*) the capital, (*c*) the largest lake, (*d*) the largest island, and (*e*) the highest mountain of New York State. 10
2. Name three lakes and two rivers through which the bounding lines of New York State pass. 10
3. Bound Utah. 10
4. Name the ten territories of the United States. 10
5. What is a mountain range? 10
6. Locate the following mountains: (*a*) the Pyrenees, (*b*) Alps, (*c*) Ural, (*d*) Scandinavian, (*e*) Caucasus. 10
7. Give two causes for differences in climate. 10
8. When are the days and nights equal all over the world? Why? 10
9. Define axis, diameter, circumference, poles, and equator. 10
10. How much is the axis of the earth inclined from the perpendicular to the plane of the earth's orbit? 10

CIVIL GOVERNMENT.

1. Name the three departments of the United States government and state of what each is composed. 30
2. What is the term of office of the President of the United States? Of United States Senators? 10
3. What are the duties of assessors? 10
4. Name five duties of the School Commissioner. 25
5. Define State, county, township, election district and school district. 25

P. M.

COMPOSITION.

1. Write a letter to your commissioner, embodying in it a statement of (*a*) your present grade of certificate, (*b*) the grade you are aiming to secure, (*c*) the district where you are now teaching, (*d*) the name of the trustee or trustees, (*e*) where you were educated, using not less than one hundred words. 75

NOTE.—For general excellence of all papers submitted with reference to neatness, order and punctuation. 25

GRAMMAR.

"If we retrench the wages of the schoolmaster, we must raise those of the recruiting-sergeant." EDWARD EVERETT.

1. Write out a complete analysis of the above extract, using any system familiar to you. 10
2. Parse *If* and *recruiting-sergeant.*
3. Decline we.
4. Give the four principal parts of the verbs compel, freeze, see, lie and lay. 10
5. Give a synopsis (first person, singular number) of the verb *be*, in the potential mode. 10
6. Write an interrogative sentence or sentences containing:
   a. A phrase modifying the subject.
   b. A compound relative pronoun,
   c. A pronoun in the possessive case,
   d. A verb in the subjunctive mode. Underscore the parts required. 10
7. Give the plurals of money, chimney, valley, duty and Henry. 10
8. Write three nouns which have no plural, and two which have no singular. 10
9. Define etymology and syntax. 10
10. Write one or more declarative sentences containing all the eight parts of speech; underscore words representing the several parts of speech. 10

PHYSIOLOGY AND HYGIENE.

1. What organs secrete (*a*) the saliva, (*b*) the gastric juice, (*c*) the bile, (*d*) the pancreatic juice? 20
2. A child is less liable to break a bone than an old person. Why? 20
3. Tell the use of (*a*) the heart, (*b*) the stomach, (*c*) the capillaries, (*d*) the trachea. 20
4. Give two reasons why a frequent change of air in a school room is specially important. 20
5. Name three kinds of teeth in each jaw. 20

AMERICAN HISTORY.

1. What prominent events are associated with the following dates: 1775, 1781, 1787, 1861, and 1865? 25
2. Between what two cities was the first telegraph line built? By whom? 15
3. What was the Nullification Act of 1832? What State passed that act? Who was President then? 15
4. Name the last five regularly-elected Presidents and Vice-Presidents. 25
5. Where, when, and under what circumstances did General Grant die? Where was he buried? 20

CURRENT TOPICS.

1. When will occur the next regular election of (*a*) school trustees, (*b*) school commissioners, (*c*)Governor of this State, and (*d*) State Senators for this State? 20
2. What Commission has just completed its labors at Washington? Why was this commission made necessary? 20
3. What is meant by industrial education as connected with public education? 20
4. Give a short account of the "Female Suffrage" movement, mentioning some of the leaders and some of the points already gained for it. 20
5. What are the duties of a stenographer? 20

ANSWERS TO QUESTIONS FOR MARCH, 1888.

ARITHMETIC.

1. MCCXLIX.
2. Divide the product by the given number and the quotient will be the other number Reason,—The product was produced by multiplying together these two numbers.
3. Rejecting equal factors from numbers sustaining to each other the relation of dividend and divisor. To shorten divisions by rejecting equal factors.
4. $\frac{513}{2264} = .22 +$
5. PHELPS & Co.,

To BARBER & PERKINS, *Dr.*

To 15 reams paper @ $4	$60 00
" 20 M envelopes @ $2.70	54 00
	$114 00

Rec'd Payment,

BARBER & PERKINS.

6. 248 rd. 4 yd. 2 ft. 8 in.
7. 35%
8. $37.525
9. 688.07+
10. $108.845.

GEOGRAPHY.

1. (*a*) New York on New York Upper Bay; (*b*) Albany on the Hudson River; (*c*) Oneida in the Central part of the State; (*d*) Long Island, in the S. E. part of the State; (*e*) Mt. Marcy, in the Adirondacks.
2. Lakes Erie, Ontario, and Champlain, and any two of the following rivers: Niagara, St. Lawrence, Poulteny, Hudson and Delaware.
3. On the north by Idaho and Wyoming; east by Idaho and Colarado; south by Arizona; west by Nevada.
4. Alaska, Arizona, Dakoto, Idaho, Indian, Montana, New Mexico, Utah, Washington and Wyoming.
5. A series of mountains.
6. (*a*) On the borders of France and Spain; (*b*) On the borders of France, Germany and Italy; (*c*) On the borders of Russia and Siberia; (*d*) On the borders of Norway and Sweden; (*e*) On the borders of Russia, Persia, and Turkey, in Asia.
7. Latitude, elevation, and inclination of earth's axis, and gulf stream.
8. At the equinoxes, March 21, and September 23. Because then the sun is verticle at the equator.
9. The diameter on which the earth turns. A straight line through the center of the earth from surface to surface. The distance around the earth. The ends of the earth's axis. A great circle passing around the earth midway between the poles.
10. 23½ degrees.

CIVIL GOVERNMENT.

1. Legislative (Congress). Executive (President). Judicial (Supreme Court and such inferior Courts as Congress may establish).
2. 4 years. 6 years.
3. To estimate the value of taxable property.
4. Any five of the following: To visit and examine schools; to recommend changes in the course of study; to condemn school buildings; to direct trustees to abate nuisances; to direct trustees to make necessary alterations or repairs (not to exceed $200); to examine teachers; to hold institutes; to examine charges affecting moral character of teachers; to report to State Superintendent.
6. A State is a community of persons, living within certain limits of territory, under one Government; a county is one of the direct sub-divisions of a State; a township is one of the direct sub-divisions of a county; an election district is a portion of a township set apart for election purposes; a school district is one of the divisions of a township set apart for school purposes.

COMPOSITION.

(These answers cannot be foreseen.)

GRAMMAR.

1.*

2. *If* is a conjunction connecting the clauses. *Recruiting-Sergeant* is a noun, common, compound, third person, singular number, masculine gender, objective case, and object of preposition *of.*

3.

	Singular.	*Plural.*
Nom.	I,	we.
Poss.	my, mine,	our.
Obj.	me,	us.

4.

Ind. Pres	*Ind Past.*	*Part Pres.*	*Part Past.*
Compel,	compelled,	compelling,	compelled.
Freeze,	froze,	freezing,	frozen.
See,	saw,	seeing,	seen.
Lie,	lay,	lying,	lain.
Lay,	laid,	laying,	laid.

5. I may be, I might be, I may have been, I might have been.

6.*

7. Moneys, chimneys, valleys, duties, and the Henrys.

8. Gold, pride, courage, idleness, cohesion, architecture, rhetoric, bronchitis, meekness, etc., have no plural; assets, suds, scissors, tongs, billiards, breeches, trowsers, oats, fireworks, vespers, goods, cattle, ides, embers, literati, etc., have no singular.

9. Etymology treats of the different parts of speech, their classification and modifications. Syntax treats of the relation, agreement, government, and arrangement of words in sentences

PHYSIOLOGY AND HYGIENE.

1. (*a*) Salivary glands; (*b*) stomach; (*c*) liver; (*d*) pancreas.

2. A child's bones contain a smaller proportion of lime and are not so brittle.

3. (*a*) It is the central organ of the circulation, and drives the blood to all parts of the body. (*b*) In it the gastric juice dissolves the albumen, gluten, and fibrine of foods, and makes them fit to enter the blood. (*c*) They connect the arteries and veins. (*d*) It carries air into the lungs.

4. Large number of persons present, many dirty bodies, and dirty clothing, much chalk and other dust, etc.

5. The four cutting teeth in each jaw are called *incisors.* The pointed teeth next back of the incisors are called *cuspids.* The next back of the cuspids are the *bicuspids.* The back teeth are called *molars.*

AMERICAN HISTORY.

1. Battle of Lexington; surrender of Cornwallis; adoption of the Constitution; attack on Fort Sumter; Lee's surrender.

2. Baltimore and Washington; Prof. Morse.

3. The people of South Carolina refused to pay duties on foreign goods; South Carolina; Andrew Jackson.
4. Lincoln and Johnson, Grant and Colfax, Hayes and Wheeler, Garfield and Arthur, Cleveland and Hendricks.
5. On Mt. McGregor, July, 1885, of cancer of the throat; at Riverside Park.

CURRENT TOPICS.

1. (*a*) On the last Tuesday of August next. (*b*) At the general election of 1890. (*c*) At the next general election. (*d*) At the general election of 1889.
2. The Fisheries Commission. Disputes as to the respective rights of Canada and the United States on the fishing grounds of the North Atlantic coast.
3. The introduction of teaching to train the hand and the eye, with a view to practical application in life work.
4.*
5. By short-hand to write from dictation and afterward transcribe the matter, or reproduce it in Roman letters by a type-writer.

QUESTIONS FOR EXAMINATION, APRIL 7, 1888.

Second and Third Grades.

A. M.

ARITHMETIC.

(In the solution of problems, indicate every process.)

1. Write in words, 10
   9,014,008.
   800,079.
   Write in figures,
   Six billion, four million, forty-eight thousand, nine hundred sixty.
   Four million, seventy-five.
   Nine hundred thousand, six.
2. Divide 96 ten-thousandths by 384 hundred-millionths. 10
3. Goods marked $1.50 are sold at a discount of 40 per cent. What is the selling price? 10
4. John Smith bought of Clark & Jones,
   4 lb. 13 oz. beefsteak, @ 21 cents per lb.
   12 lb. bacon @ 12½ cents.
   Make a properly receipted bill of the above, dated at the time and place of this examination.
5. A rectangular tank is 5 feet long, 2 feet wide, and 2 feet deep. How many gallons of water will it hold? 10

6. A man has a field of wheat containing 25 acres, which are 5 per cent of his whole farm. How many acres in his farm? 10
7. Sold a horse for $240, thereby losing 20 per cent. Required the cost. 10
8. A square piece of land contains 538,756 square rods. What is the length of one side? 10
9. A pile of 4-foot wood is 16 feet long and 6 feet high. Required the cost at $5.50 per cord. 10
10. What is the interest on $680.43 for 4 mo. and 12 da. at 5½ per cent. 10

GEOGRAPHY. 10

1. Define great circles, meridians and polar circles. 10
2. What are the trade winds? 10
3. Bound Dakota. 10
4. Describe the River Rhine. 10
5. Locate St. Petersburg and Naples. 10
6. Locate Pittsburg and Memphis. 10
7. Describe the James River. 10
8. Mention ten cities of this state, stating the county in which each is located. 10
9. Where is Madagascar? 10
10. What lake is the source of the Susquehanna River.

CIVIL GOVERNMENT.

1. Mention five State officers of this State who are elected by the people. 10
2. By what means may a village become a city? 10
3. Conviction requires how many votes of a trial jury? 10
4. By whom are Governors of Territories chosen? 10
5. Name the Member of Assembly from your district. 10
6. Name the State Senator representing your district. 10
7. Name the counties composing the Senatorial district. 10
8. Name your Representative in Congress. 10
9. Name the counties composing the Congressional district. 10
10. How many days are allowed the Governor to consider a bill, while the Legislature is in session? 10

READING.

To be supplied by the Commissioner.

P. M.

COMPOSITION.

1. Write a short letter to your School Commissioner, telling him what school you wish or expect to teach. 25
2. Write a short account of the Pilgrims in accordance with the following analysis: (*a*) Cause of leaving their own country; (*b*) whence they sailed; (*c*) the voyage; (*d*) the landing; (*e*) life in the New World. 50

   For general excellence of all papers submitted, with reference to *neatness, order* and *punctuation.* 25

GRAMMAR.

Listen, my children, and you shall hear
Of the midnight ride of Paul Revere,
On the eighteenth day of April in seventy-five;
Hardly a man is now alive
Who remembers that famous day and year.

The first six questions have reference to the above selection.

1. What are the simple subjects of the principal clauses? 10
2. Name the predicate or predicates of the subordinate clause or clauses. 10
3. What are the three modifiers of *man?* 10
4. Give the syntax (case and why), of *children.* 10
5. The relation of what words is shown by *on?* 10
6. Give the mode of each verb. 10
7. What are the feminines of *hero, giant, testator, Czar, Joseph?* 10
8. Change the following to a sentence having a principal and adverbial clause:
   Troy being taken by the Greeks, Æneas came to Italy. 10
9. Decline the personal pronoun of the second person. 10
10. Write one or more sentences, illustrating the use of *that* as a (*a*) pronoun, (*b*) adjective, (*c*) conjunction. 10

PHYSIOLOGY AND HYGIENE.

1. What are the four divisions of the human heart? 20
2. What causes the arm to move at will? 20
3. State two reasons why too rapid eating causes indigestion. 20
4. What effect has alcohol on the temperature of the body? 20
5. What is the usual temperature of the human body? What should be the temperature of a school room? 20

AMERICAN HISTORY.

1. What was the Stamp Act? 20
2. Who were the respective commanders at the battle of Gettysburg? In what State was it fought? 20
3. In what two wars was George Washington a distinguished participant? 20
4. For what act is Benedict Arnold's name execrated? 20
5. What was the Missouri Compromise? 20

CURRENT TOPICS.

1. Give the names of two persons who were candidates for the office of Secretary of State at our last State election. 10
2. Who was elected United States Senator from New York in 1887? Whom did he succeed? 10
3. Name one of the Justices of the Supreme Court in your Judicial district. 10
4. Name five leading daily newspapers published in New York city. 10
5. What two important State officers are to be chosen this year in this State. 10
6. What prominent gentleman has recently announced that he is not a candidate for the Presidential nomination? 10
7. What prominent American jurist has recently died? (5) What office did he hold? (5) 10
8. Who is the President of the New York Central Railroad? 10
9. What European monarch has recently died? 10
10. Name the Republican and Democratic candidates for President at the last three presidential elections. 10

ANSWERS TO QUESTIONS FOR APRIL 7, 1888.

ARITHMETIC.

1. Nine million, fourteen thousand, eight.
   Eight hundred thousand, seventy-nine.
   6,004,048,960.
   4,000,075.
   900,006.
2. 2,500.
3. 90 cents.
4. $2.51. Ordinary form of bill.
5. 149.6 gallons.
6. 500 acres.
7. $300.
8. 734 rods.
9. $16.50.
10. $13.72.

GEOGRAPHY.

1. See any ordinary geography.
2. Winds in the torrid zone, and often a little beyond it, which blow from the same quarter throughout the year unless affected by local causes.
3. North by Canada; east by Minnesota and Iowa; south by Nebraska; west by Wyoming and Montana.
4. The Rhine rises in Switzerland, flows in general, north-west, and empties into the North Sea.
5. St. Petersburg is in the western part of Russia, on the Gulf of Finland.
   Naples is in southern Italy, on the Bay of Naples, a part of the Mediterranean Sea.
6. Pittsburgh is in the western part of Pennsylvania, at the junction of the Alleghany and the Monongahela Rivers.
   Memphis is in the south-western part of Tennessee, on the Mississippi river.
7. The James river rises in the south-western part of Virginia, flows generally east, and empties into Chesapeake Bay.
8. No definite answer can be given here.
9. Madagascar is east of southern Africa, in the Indian Ocean.
10. Otsego.

CIVIL GOVERNMENT.

1. Governor, Lieutenant-Governor, Comptroller, Secretary of State, Treasurer, Attorney-General, Engineer and Surveyor.
2. By an act of the Legislature.
3. Twelve—all of them.
4. Governors of territories are appointed by the President and confirmed by the Senate; the members of territorial legislatures are elected by the people of the territories.

5, 6, 7, 8, and 9. Answers will differ according to locality.

10. 10 days.

COMPOSITION.

Obviously no answers can be given here.

GRAMMAR.

1. You; you; man.
2. Remembers.
3. Adjectives, *a* and *alive*, and the adjective (relative) clause, *who remembers*.
4. Nominative independent by direct address.
5. Ride — day.
6. *Listen* is in the imperative mode; *shall hear*, *is* and *remembers* are in the indicative mode.
7. Heroine, giantess, testatrix, czarina, Josephine.
8. When Troy had been taken by the Greeks, Æneas came into Italy.
9. See a school grammar.
10. Example: Give me the book *that* lies on *that* table, *that* I may read it.

PHYSIOLOGY AND HYGIENE.

1. Right auricle, right ventricle. Left auricle, left ventricle.
2. The contraction of a muscle, by a nervous impulse sent from the brain.
3. From imperfect mastication, (*a*) sufficient saliva is not mingled with the food; (*b*) the food presents too little surface for the action of the gastric juices of the stomach.
4. The temperature is at first raised above normal temperature, then lowered below.
5. 98½. From 68° to 70°.

AMERICAN HISTORY.

1. An Act of Parliament compelling the people of the American Colonies to buy government stamps and place them on legal papers.
2. Gen. Meade, Union; Gen. Lee, Confederate. Pennsylvania.
3. The French and Indian War of 1755; Revolutionary War.
4. His traitorous negotiation with Sir Henry Clinton to surrender West Point to the British.
5. An Act of Congress which provided that Missouri should come into the Union as a slave State, and that thereafter slavery should be forever prohibited north of 36° 30′.

CURRENT TOPICS.

1. Frederick Cook; Frederick D. Grant; Henry George. (Either two of the three.)
2. Frank Hiscock; Warner Miller.
3. Answers will differ according to locality.
4. World, Tribune, Herald, Times, Sun, Post, Telegram, Star, Mail and Express, Press, Commercial Advertiser, Staats Zeitung.
5. Governor and Lieutenant Governor.
6. James G. Blaine.
7. Morrison R. Waite, Chief Justice.
8. Chauncey M. Depew.
9. Emperor William of Germany.
10. 1876: Hayes, Tilden; 1880: Garfield, Hancock; 1884: Blaine, Cleveland.

QUESTIONS FOR EXAMINATION, MAY 4 and 5, 1888.

First Grade, Friday, May 4.

A. M.

ARITHMETIC.

(In the solution of problems, indicate every process.)

1. To $3\frac{3}{5}$ add $5\frac{2}{3}$; from the sum subtract $4\frac{7}{15}$; multiply the remainder by $1\frac{1}{2}$; divide 18 by the product. 10
2. If $\frac{3}{4}$ of 9 bushels of wheat cost $13\frac{1}{2}$, what will $\frac{5}{8}$ of a bushel cost? 10
3. From a unit of the third order subtract the sum of .371 and sixty-five ten-thousandths, multiply the remainder by three-tenths, and divide the product by 5 millionths. 10
4. Reduce 7 cwt. 28 lb. 4 oz. to the decimal of a ton. 10
5. How many pounds of cotton at $11\frac{1}{4}$ cents per pound can a broker buy for $9,225, and retain his commission at $2\frac{1}{2}$ per cent.? 10
6. Required the exact interest of $926 from January 3 to June 11, 1887, at 6 per cent. per annum. 10
7. Find the square root of 3, to three decimal places. 10
8. At $25 per M., what is the cost of 7 boards, 15 ft. long and 16 in. wide? 10
9. In the fraction $\frac{4}{9}$ what is the fractional unit? The unit of the fraction? 10
10. If hay sells for $14 a ton at a loss of $2\frac{1}{2}$ per cent., what should it sell for to gain 15 per cent.? 10

GEOGRAPHY.

1. What parallels of latitude form parts of the boundaries of New York State? 10
2. Give the political boundaries of Iowa. 10
3. Name and locate the great English seaport for trade with the United States. 10
4. What two countries of Europe are republics? 10
5. Name the largest three rivers of Africa. 10
6. What are the dikes of Holland? Why were they built? 10
7. Where are the Hebrides Islands? To what country do they belong? 10
8. What and where is the Saragossa Sea? 10
9. What is Standard Time? 10
10. Why is a degree of longitude at Albany shorter than a degree of latitude at the same place? 10

CIVIL GOVERNMENT.

1. What is meant by impeachment? 10
2. Where does the sole power of impeachment reside in the Government of the United States? 10

3. What is a mayor? What is a common council? 10
4. What advantage would be supposed to follow from having the legislative department of a government consist of two branches or bodies instead of one? 10
5. What qualification is prescribed by the Constitution for voters for members of Congress? 10
6. How often is there a new Congress? 10
7. How may a foreigner become a citizen? 10
8. What is an indirect tax? Give an example. 10
9. Name one privilege that a territorial representative in Congress is allowed and one that he is denied.
10. How many congressional districts are there in this State? 10

P. M.

COMPOSITION.

1. Write a reply to a letter from your commissioner asking you to name the text-books in Arithmetic, Geography and Physiology which you would recommend for a school of your grade, and to state fully your reasons for each recommendation.

   Correctness and appropriateness of language. 25
   Correctness in form and general appearance. 25
   Correctness in punctuation and use of capitals. 25

   For remaining 25 per cent. see Regulations. (General Appearance of all papers.)

GRAMMAR.

Most sweet it is with uplifted eyes,
  To pace the ground, if path there be or none;
While a fair region round the traveler lies,
  Which he forbears again to look upon.

1. Write list of the clauses in the above selection, classifying them as principal or subordinate. 10

   NOTE.—In naming clauses, it is sufficient to include only simple subjects and simple predicates.
2. State what each subordinate clause modifies. 10
3. Give four modifiers of *to pace*, including its object as one. 10
4. Parse *to pace*. 10
5. Give syntax (case and why) of *path* and *which*. 10
6. What is the object of *forbears?* Parse *round*. 10
7. Give an example of a participle taking an object, and being itself the object of a preposition. 10
8. Illustrate the use of an adverb modifying a phrase (preposition and its object). 10
9. In the sentence, "He sent his son home that way," give the syntax of *home* and *way*. 10
10. Give syntax of *him* and *man* in the sentence: "I believe him to be a man wanting in veracity." 10

PHYSIOLOGY AND HYGIENE.

1. Define Anatomy, Physiology, Hygiene. 10
2. What provision has nature made for reducing the temperature of the body and so preventing it from becoming excessively heated? 10
3. How may an habitually stooping posture injure the health? 10
4. Describe the manner in which the bones of the skull are generally united. 10
5. Of what three parts is the cerebro-spinal system of nerves composed? 10
6. What are bronchial tubes? 10
7. Describe the corpuscles of the blood. What is the effect of alcohol upon them? 10
8. Which two of the special senses does the tongue possess in a high degree of perfection? Are the nervous fibres near the surface of the tongue numerous or few? 10
9. Of what part of the skin are the hair and nails a part or modification? 10
10. Where is the cordiac orifice? Where is the pylorus? 10

First Grade, Saturday, May 5.

A. M.

AMERICAN HISTORY.

1. During what war was Braddock's defeat? Where? 10
2. Mention two things for which Benjamin Franklin is noted. 10
3. In what city and in what building was the Declaration of Independence signed? 10
4. Who were the Hessians who took part in the Revolutionary War? How came they here? 10
5. For what is each of the following especially remembered: John Paul Jones? General Anthony Wayne? 10
6. Who was the hero of "Lundy's Lane"? Of what war was that a battle? 10
7. Who was President of the United States during the war of 1812? The Mexican War? 10
8. Mention two noted Anti-Slavery agitators in the United States. 10
9. Where and for what was John Brown executed? 10
10. What is meant by the "Centennial year"? What event was specially celebrated? 10

ALGEBRA.

1. Subtract $-2a$ from $5a$, and explain the process. 10
2. Reduce $3x+4-\frac{x-7}{3}$ to an improper fraction. 10
3. *In general* what is the effect of a minus sign before a dividing line when we clear of fractions? 10
4. Resolve abx^2-aby^2 into its prime factors. 10
5. State the methods of eliminating one of two unknown quantities by comparison. 10
6. By the above method find the values of x and y in the quotients $4x-3y=a$, and $5x+4y=b$. 10

7. Find two numbers, such that if $\frac{1}{2}$ of the greater be added to $\frac{1}{3}$ of the less, the sum will be 13; and if $\frac{1}{2}$ of the less be subtracted from $\frac{1}{3}$ of the greater, the remainder will be nothing. 10

8. Expand $(2a+b)^3$ by the binomial theorem. 10

9 and 10. Make and reduce an affected quadratic equation, to illustrate one method of completing the square in order to find the values of the unknown quantity. 20

BOOK-KEEPING.

1. What is an invoice book? 10

August 1, 1888. Cash on hand, $261.35; received for petty sales, $86.76; received of John Rich on account, $37.50; paid store rent, $60; received for Wm. Seeley's note, $203.72; paid express charges, 90 cents; paid Enz & Miller on account, $119.65.

2. Rule a form of cash book. 10

3. Enter the foregoing statement. 10

4. Balance the account. 10

5. A merchant buys goods to the amount of $516.30, and gives his note in payment. Is the transaction a matter of account? Why? 10

6. Draw check on the First National Bank of Albany for fifty dollars, payable to the order of Howard Finch. 10

August 1, 1888, J. H. Osgood & Co., of Buffalo, N. Y., sold Mrs. C. K. Mills 18 yards of silk at $1.70 per yard, $2\frac{1}{3}$ dozen buttons at 80 cents per dozen, 32 yards of carpet at 83 cents per yard, and 3 pairs of window curtains at $3.25 per pair.

7–8. Make bill of sale to Mrs. Mills, using proper abbreviations. 20

9. Receipt the bill for the firm. 10

10. A pays for a bill of goods by note at 60 days, dated July 7, 1888. Find when the note becomes due. 10

P. M.

SCHOOL LAW.

1. How can a common school district change from three trustees to one? 20

2. (*a*) What officers apportion the public moneys among the school districts?
(*b*) Upon what officer does the trustee draw orders to pay teachers that money? 20

3. For what officers may women vote in this State? 20

4. For what term of office is a sole trustee elected? The several trustees. when a district changes from one trustee to three? Each of three trustees after a first election of three trustees by a district? 20

5. What is the ruling of the Department of Public Instruction in regard to the teacher's authority over pupils on the way to and from school? 20

PHYSICS.

1. Why are iron tires heated before they are placed on wagon wheels? 10
2. Describe some simple means of developing electricity. 10
3. Define malleability and ductility. 10
4. What degrees on a Fahrenheit thermometer indicate the freezing and boiling of water? 10
5. Why will the frost disappear from frozen ground when it has been covered with deep snow for several weeks? 10
6. In what form will iron resist the greatest pressure exerted in a direction tending to break it? 10
7. What causes the oil to rise in a lamp wick? 10
8. Why are we not crushed by the enormous weight of the air? 10
9. Why are different sensations experienced on touching a piece of wood and a piece of iron, each having had equal exposure to the heat? 10
10. What is meant by the center of gravity? 10

METHODS.

1. In subtracting 27 from 63, how would you explain the reason for each step? 10
2. Do you think it advisable to use diagrams in teaching the analysis of English sentences? Give reasons for your opinion. 10
3. Give one rule that ought to be observed by all teachers in framing questions on subjects they are teaching. Give the reason for the rule. 10
4. Describe your method of explaining and illustrating how the diurnal revolution of the earth produces the apparent daily motion of the sun. 10
5. Give a good method of conducting a spelling exercise, stating the number of words in the lesson, the manner in which the pupils spell, and the manner of criticising and correcting the work. 10
6. Write a short sentence and describe your method of teaching beginners in analysis, what is the subject and why, and what is the predicate and why. 10
7. Describe the manner in which you would teach a child the cardinal points of the compass. 10
8. When it is noon on the first meridian, it is 8 o'clock A. M. at longitude °60 west. How would you make that plain to a pupil? 10
9. What is a topical analysis? 10

CURRENT TOPICS.

1. Name six places in this State at which State Normal Schools are located. 10
2. How many members has the United States Senate? 10
3. Where is the burial place of U. S. Grant? 10
4. How has "rapid transit" been obtained in the City of New York? 10
5. Upon what date does Decoration Day occur? 10

6. Name three of the leading literary magazines of the present day. 10
7. Name and locate three colleges or universities of this state. 10
8. State something of interest relating to the Royal family of Germany. 10
9. Who is now Mayor of the City of New York? 10
10. What is meant by the "Brotherhood of Locomotive Engineers?" 10

ANSWERS TO QUESTIONS FOR MAY 4 AND 5, 1888.

First Grade.

ARITHMETIC.

1. $2\frac{1}{2}$.
2. $1.25.
3. 5,977,350.
4. .364,125 T.
5. 80,000 lbs.
6. $24.20.
7. 1.732+.
8. $3.50.
9. The fractional unit is $\frac{1}{9}$. The unit of the fraction is 1.
10. $18.40 per ton.

GEOGRAPHY.

1. 42° and 45°.
2. It is bounded north by Minnesota, east by Wisconsin and Illinois, south by Missouri, and west by Nebraska and Dakota.
3. Liverpool, on the Mersey, in the northwestern part of England.
4. France and Switzerland.
5. Nile, Niger, and Congo.
6. High embankments. They were built to reclaim land which had been overflowed by the ocean.
7. They are northwest of the mainland of Scotland, and belong to that country.
8. A grassy sea in the Atlantic ocean, west of the northern part of Africa.
9. Time as reckoned from the 60th, 75th, 90th, 105, and 120 degrees of west longitude.
10. Owing to the gradual approach to each other of the meridians, in the latitude of Albany, the degrees of *longitude* are much shorter, while *latitude* is reckoned from parallel to parallel, and the degrees remain of the same length.

CIVIL GOVERNMENT.

1. An accusation against a public officer, charging him with crime or misdemeanor.
2. In the House of Representatives.
3. The chief executive officer of a city. The Legislative body of a city.
4. One body ought to be a check upon the other and so prevent unwise or hasty legislation.
5. They must be entitled to vote for the most numerous branch of the State Legislature where they reside.
6. Once in every two years.
7. By residence in this country and naturalization.
8. A tax on articles consumed, but not collected directly from the consumer, *e. g.*, A duty on sugar.
9. He is allowed to speak, but not to vote.
10. Thirty-four.

COMPOSITION.

No answer can be given.

GRAMMAR.

1. Sweet it is, principal.

   Subordinate { *a*, If path be, adverbial.
   b, (If there be) none, adverbial, (don't insist on this).
   c, While region lies, adverbial.
   d, Which he forbears, adjective. }

2. Clauses marked (*a*) (*b*) (*c*) modify the verb *to pace.*
   (*d*) modifies *region.*
3. Object *ground;* adjective, *sweet;* the first three subordinate clauses above stated.
4. Verb, principal parts, pace, paced, pacing, paced, regular, transitive, active voice, infinitive mode, present tense, used like a noun, and in apposition with *it* nominative case. (Some would say, subject of *is*, and represented by the redundant word, *it.*)
5. *Path,* nominative, subject of *be, which,* objective, object of *upon.*
6. The infinite *to look; round,* preposition showing relation between its object, *traveler* and the verb, *lies.*
7. He is engaged in *writing* letters.
8. The leaves fell *only* in the morning.
9. *Home* and *way,* objective, object of prepositions not expressed; it would be allowed to say that *home* is used as an adverb, modifying the verb.
10. *Him* is the subject of the infirmative *to be,* and is in the objective case, man is a predicate noun (attribute) and agrees with the subject *him,* in the objective case. (Other constructions are found in the grammars.)

PHYSIOLOGY AND HYGIENE.

1. Anatomy is a science which treats of the structure of the body; physiology, of the functions of the various organs; and hygiene, of the laws of health.
2. Perspiration.
3. It may cramp the vital organs, and curve the spine.
4. By sutures, or irregular edges.
5. The brain, the spinal cord, and the spinal nerve.
6. The tubes branching off from the windpipe into the lungs.
7. They are very minute, disc-shaped bodies of a red color; they are shrunken by alcohol, and rendered incapable of doing their work.
8. Touch and taste. The nerves, there, are very numerous.
9. Of the cuticle.
10. At the junction of œsophagus and stomach. At the junction of duodenum or small intestine with the stomach.

AMERICAN HISTORY.

1. French and Indian war. In Western Pennsylvania.
2. Answers will vary.
3. Philadelphia. Independence Hall.
4. Natives of Hesse-Cassel. They were hired by the British Government to fight against the American colonists.
5. For naval victories during the Revolutionary war. For the capture of Stony Point.
6. General Winfield Scott. War of 1812.
7. James Madison. James K. Polk.
8. Answers will vary.
9. In Virginia. For making an unlawful attack upon Harper's Ferry.
10. 1876. The 100th anniversary of the Declaration of Independence.

ALGEBRA.

1. 7a. Explanations will vary.
2. $\frac{8x+19}{3}$
3. All the signs in the numerator of the fraction must be changed.
4. $ab\,(x+z)\,(x-z)$.
5. Find the value of the same unknown quantity in terms of the other in each equation; place these values equal to each other and reduce.
6. $x=\frac{3y+a}{4}$; $x=\frac{b-4y}{5}$; from which, $x=\frac{4a+3b}{31}$. $y=\frac{4b-5a}{31}$.
7. $x=18$, and $y=12$.
8. $8a^3+12ab^2+6ab^2+b^3$.

9 and 10. Examples and methods will vary.

BOOK-KEEPING.

1. An indexed book in which are entered (generally by pasting) the invoices (or bills) of goods purchased.
2, 3, 4. See any approved forms.
5. No. The creditor has accepted the note in payment.
6, 7. See any approved form.
8. Received Payment, J. H. Osgood & Co., per (name of person examined.)
9. September 8, 1888.

SCHOOL LAW.

1. By adopting at an annual meeting, by a majority vote, a resolution that the district change from three trustee to one, and afterward dispensing with the election of a trustee until the trustees then in office vacate their office by reason of expiration of term for which they were elected, or otherwise.
2. (*a*) The School Commissioner. (*b*) The Supervisor.
3. School district officers.
4. One year. One for one year, one for two years, and one for three years. Three years.
5. The teacher has no legal control over the pupil before reaching the school premises, or after leaving them upon dismissal.

PHYSICS.

1. They are made larger by heating from the expansion of the iron.
2. Rub a hard rubber comb or a warm dry glass tube on a piece of woolen cloth; it will become charged with electricity and will attract small bits of paper. Other illustrations may be given.
3. Malleability is that property of matter by virtue of which it may be hammered or rolled into thin sheets. Ductility is that property of matter by virtue of which it may be drawn into fine threads or wire.
4. 32° and 212°.
5. The snow is a very poor conductor of heat and acts like a thick blanket, which retains the heat of the earth in sufficient amount to gradually thaw the frozen earth.
6. In the form of a tube.
7. Capillary attraction.
8. The air presses equally in all directions and the internal pressure balances the external.
9. The different conductivities of the two substances.
10. That portion of a body which being supported, the body is supported.

METHODS.

The answers to the questions on methods admit of so much variation that it would not be practicable to furnish the answers.

CURRENT TOPICS.

1. Albany, Potsdam, Cortland, Oswego, Geneseo, Brockport, Buffalo, Fredonia, New Paltz.
2. Seventy-Six.
3. Riverside Park, New York City.
4. By means of elevated railroads,
5. May 30th.
6. Answers will vary.
7. Answers will vary.
8. Answers will vary.
9. Abram S. Hewitt.
10. A secret organization of locomotive engineers whose object is mutual assistance and protection for its members.

QUESTIONS FOR EXAMINATIONS, SATURDAY, MAY 5, 1888.

Second and Third Grades.

A. M.

ARITHMETIC.

(In the solution of problems indicate every process.)

1. Name in order, commencing at the left, the first five integral periods in Arabic notation. 10
2. How many yards of carpet 27 inches wide are required to carpet a room 27 feet by 22 feet 6 inches? 10
3. Find the cost of digging a cellar 30 feet long, 15 feet wide, and 5 feet deep, at 30 cents per cubic yard? 10
4. Define (*a*) common multiple; (*b*) abstract number. 10
5. How is the principal found when only time, rate, and interest are known? 10
6. Express decimally $12\frac{1}{2}$ per cent., $\frac{3}{4}$ per cent., $12\frac{7}{8}$ per cent., $\frac{7}{25}$ per cent., and $\frac{3}{32}$ per cent. 10
7. A commission merchant after paying $2.26 for freight and cartage, and deducting his commission, remits me $22.22 as the net proceeds of a firkin of butter consigned to him. Find his commission at 4 per cent. 10
8. Find the true discount of $350 for 1 year and 3 months and 18 days at 6 per cent. per annum. 10
9. What is the difference in local time between two places, one of which is 14° 26′ west of St. Louis and the other 19° 19′ east? 10
10. Find the sum, the difference, and the product of $3\frac{5}{8}$ and $\frac{7}{9}$. 10

GEOGRAPHY.

1. Name the "Great Lakes" and the outlet of each. 10
2. On what waters would you travel from Pittsburgh to Kansas City? 10
3. In what part of the State of New York are the following counties, viz.: Essex, Rockland, Greene, Orleans, and Chautauqua? 10
4. Name the largest city of Ohio. Of Missouri. Of Pennsylvania. Of the world. 10
5. Name and locate a lake of New York that belongs to the Mississippi River System. 10
6. Name the Gulf States in order from east to west. 10
7. Locate Dublin and Tokio. 10
8. What are meridians, and what is their use? 10
9. Until what time will the days in this latitude grow longer? 10
10. What bodies of water are separated by (*a*) the Isthmus of Panama? (*b*) the Isthmus of Suez? 10

CIVIL GOVERNMENT.

1. In what way does the Constitution provide that the smaller States shall have a larger influence in the legislative branch of our government, in proportion to their population, than the larger States? 10
2. What body has the power to try an impeachment of a United States officer? 10
3. How often does Congress assemble? When? 10
4. Why is the power to coin money vested in Congress rather than in the Legislatures of the States? 10
5. Why does the government grant patents and copyrights? 10
6. Where is the power to declare war vested? 10
7. What is the electoral college? 10
8. When will the term of President Cleveland's successor commence? 10
9. Name two qualifications, prescribed by the Constitution for eligibility to the office of President of the United States. 10
10. When is a person said to be "admitted to bail"? 10

READING.

To be supplied by the commissioner.

P. M.

COMPOSITION.

1. Write a description of the school-house where you taught last, or, if you have not taught, where you last attended school.

   Let your description be brief, and let it embrace these points: The size of the building, its material, its seating capacity, its general condition of repair, its hygienic qualities—such as location, means of heating and ventilation, provisions for light,

etc.,—its facilities for teaching—such as blackboards and other apparatus,—and suggestions for improvements.

Correctness and appropriateness of language, 25
Correctness in form and general appearance. 25
Correctness in punctuation and use of capitals. 25

For remaining 25 per cent. see Regulations. General Appearance of all papers.

GRAMMAR.

Sweet was the sound, when oft, at evening's close,
Up yonder hill the village murmur rose.
There as I passed with careless steps and slow,
The mingling notes came softened from below.—*Goldsmith.*

NOTE.—The first four questions have reference to the above selection.

1. What are the simple subjects of the principal clauses? What are the simple predicates of the subordinate clauses? 10
2. Give three modifiers of *came.* 10
3. Mention two adverbs, and state what they modify. 10
4. Select five adjectives (including *the*) and state what they modify. 10
5. Conjugate the verb *forsake,* in the passive voice, indicative mode, past perfect (pluperfect) tense. 10
6. Define a collective noun; give two examples. 10
7. What parts of speech may connect clauses? Illustrate each by a sentence or sentences. 10
8. Write a sentence containing a declarative and an interrogative clause. 10
9. Write a sentence or sentences illustrating a phrase (preposition and its object) used (*a*) adjectively, (*b*) adverbially. 10
10. Illustrate by a sentence a clause used as attribute, *i. e.,* like a noun in the predicate, forming with an intransitive verb a predicate. 10

PHYSIOLOGY AND HYGIENE.

1. Describe the diaphragm. 10
2. What is the pulse? 10
3. What is the pupil of the eye? 10
4. Name two reasons which a teacher might give pupils in advising them to bathe frequently. 10
5. What would be good advice for a teacher of hygiene to give in reference to the times for eating? Give reasons for the advice. 10
6. What gland secretes the bile? 10
7. Describe the movement of the walls of the stomach when containing food. For what purpose is the movement? 10
8. What part of a bone is hardest? 10
9. What beneficial purpose is served by the readiness of the blood to coagulate? 10
10. Does alcohol impart heat to the body? State some fact, which you have observed or which you have read, to prove your assertion. 10

AMERICAN HISTORY.

1. What European discovered the Mississippi River? The Pacific Ocean, from the heights of Darien? 10
2. After whom was this continent named? Why was it so named? 10
3. State facts relating to Nathan Hale. To John Andre. 10
4. For what was Robert Fulton noted? Eli Whitney. 10
5. Who was the first candidate of the Republican party for President of the United States? Who was first elected president by that party? 10
6. What European nation made the first settlements in the valley of the St. Lawrence? In the valley of the Hudson? 10
7. Locate Fort Sumter; Appomattox Court-House. 10
8. Name four American generals that have been elected President of the United States. 10
9. From what country did the United States purchase Alaska? Florida? 10
10. What was the last great battle of the war of 1812? 10

CURRENT TOPICS.

1. Name six places in this State at which State Normal Schools are located. 10
2. How many members has the United States Senate? 10
3. Where is the burial place of General Ulysses S. Grant? 10
4. How has "Rapid Transit" been attained in the city of New York? 10
5. Upon what date does Decoration Day occur? 10
6. Name three of the leading magazines of the present day. 10
7. Name and locate three colleges or Universities of this State. 10
8. State something of interest relating to the royal family of Germany. 10
9. Who is now Mayor of the city of New York? 10
10. What is meant by the "Brotherhood of Locomotive Engineers?" 10

ANSWERS TO QUESTIONS FOR MAY 5, 1888.

Second and Third Grades.

ARITHMETIC.

1. Trillions, billions, millions, thousands, units (or ones).
2. 90 yards.
3. $25.
4. (*a*) A number that is exactly divisible by each of two or more given numbers; (*b*) A number used without reference to objects or quantities.
5. By dividing the known interest by the interest of one dollar for the given time, at the given rate.

6. .125; .0075; .24875; .0028; .0009375.
7. $1.02.
8. $25.32.
9. 2 hr. 15 min.
10. Sum, 4 29-72; difference, 2 61-72; product, 2 59-72.

GEOGRAPHY.

1. Superior (River St. Mary's), Michigan (Mackinaw Straits), Huron (St. Clair River), Erie (Niagara River), Ontario (St. Lawrence River).
2. Ohio, Mississippi, and Missouri Rivers.
3. In the north-eastern part bordering on Lake Champlain. In the south-eastern part bordering on the Hudson River. In the eastern part bordering on the Hudson River. In the north-western part bordering on Lake Ontario. In the south-western part.
4. Cincinnati. St. Louis. Philadelphia. London.
5. Chautauqua. South-western part of the State.
6. Florida, Alabama, Mississippi, Louisiana, and Texas.
7. Ireland (Capital). Japan (Capital).
8. Lines on the earth's surface extending from pole to pole. Used in reckoning longitude, or measuring distance from east to west, or *vice versa.*
9. Until the 21st of June.
10. (*a*) The Caribbean Sea and the Pacific Ocean. (*b*) The Mediterranean and Red Seas.

CIVIL GOVERNMENT.

1. By providing that all the States shall have an equal delegation in the Senate.
2. The Senate of the United States.
3. Every year. On the first Monday in December.
4. That the coins and standards may be uniform.
5. To protect inventors and authors in their rights, and to encourage and stimulate men to make useful inventions and books.
6. In Congress.
7. It is the Presidential Electors when assembled in their respective States to cast their votes for President and Vice-President.
8. It will commence on the 4th of March, 1889.
9. He must be native born; he must be 35 years old; he must have resided 14 years in the United States.
10. When an accused person is released from custody, surety being given for his appearance for trial.

COMPOSITION.

No answers can be furnished.

GRAMMAR.

1. Subjects of principal clauses: sound; notes. Predicates of subordinate clauses: rose; passed.
2. 1st, adverb, *there;* 2d, adverbial clause, *as I passed;* 3d, adverbial phrase, *from below.*
3. *Oft* modifies the verb *rose; there* modifies the verb *came.*
4. *Sweet* modifies *sound; the* modifies *sound, murmur,* and *notes; yonder* modifies *hill; village* modifies *murmur; careless* and *slow* modify *steps; mingling* modifies *notes.*
5. I had been forsaken, thou hadst been forsaken, he had been forsaken, we had been forsaken, you had been forsaken, they had been forsaken.
6. A noun which in the singular number denotes more than one is called a *collective noun.* Examples: school, army.
7. Conjunctions, relative pronouns and certain adverbs. (Illustrative sentences.)
8. Example: He said, *Will you go?*
9. Example: A coin *of great value* was found *in the street.*
10. His answer was "*I will go,*" or, the teacher's desire is *that all should learn.*

PHYSIOLOGY AND HYGIENE.

1. It is a muscular partition separating the cavities of the chest and abdomen.
2. It is the blood flowing through the arteries in wavelets caused by the pulsations of the heart.
3. The small opening in the front part of the eye, through which the light passes in.
4. (1) It produces cleanliness, which is desirable in itself. (2) It secures a healthful activity in the glands of the skin.
5. Not more than four meals a day would be advisable. Meals should be regular. If a meal is taken just before going to bed, it ought to be a light one. The stomach, like other organs, needs regular periods of rest. The stomach, like other organs, needs to be at rest during sleep.
6. The liver.
7. The muscles in the walls of the stomach, by successive contractions and relaxations, keep the food in constant motion, and, in this way, the digestive fluid becomes thoroughly mixed with the food.
8. The outside.
9. In case of wounds, the clotted blood stops further bleeding.
10. No. It is related, on good authority, that Arctic explorers who use alcohol have less power of enduring the cold than those who abstain from its use.

AMERICAN HISTORY.

1. DeSoto. Balboa.
2. Amerigo Vespucci. Because he visited the mainland, and called attention to his visit by writing an account of it, which was published.

3. Nathan Hale was an American who entered the British lines to secure information for Washington, was captured and executed as a spy by the British. John Andre was a British officer who was appointed to negotiate with Benedict Arnold for the betrayal of West Point into the hands of the British, and was captured and executed as a spy by the Americans.
4. As the inventor of the first steamboat in America. As the inventor of the cotton gin.
5. John C. Fremont. Abraham Lincoln.
6. The French. The Dutch.
7. Fort Sumter is on an island at the entrance to the harbor of Charleston, S. C. Appomattox Court House is in the southern central part of Virginia.
8. Washington. Jackson. Taylor. Grant. Hayes. Garfield. (Any four.)
9. Russia. Spain.
10. The battle of New Orleans.

CURRENT TOPICS.

1. Albany, Potsdam, Cortland, Oswego, Geneseo, Brockport, Buffalo, Fredonia, New Paltz.
2. Seventy-six.
3. Riverside Park, New York City.
4. By means of elevated railroads.
5. May 30th.
6. Answers will vary.
7. Answers will vary.
8. Answers will vary.
9. Abram S. Hewitt.
10. A secret organization of locomotive engineers whose object is mutual assistance and protection for its members.

QUESTIONS FOR EXAMINATION, JUNE, 1888.

Second and Third Grades.

A. M.

ARITHMETIC.

(In the solution of problems, indicate every process.)

1. What was the value May 3, 1888, of a note for $125 and interest at 5 per cent per annum, made January 4, 1887? 10
2. Express in words the number composed of 3 units of the tenth order, 8 of the ninth, 5 of the seventh, and 4 of the third. 10
3. Find the cost of 7 lb. 11 oz. of cheese at 13c per pound. 10
4. At an election A and B were the candidates for Sheriff, and B received 1,211 majority. If the whole number of votes cast was 9,891, how many votes did each receive? 10

5. Required the height of a tower that cast a shadow 21 ft. when under the same conditions of time and place a staff $10\frac{1}{2}$ft. high casts a shadow 23 in. 10
6. Reduce $\frac{63}{256}$ mi. to integers of the lower denominations. 10
7. Define (*a*) concrete number; (*b*) denominate number; (*c*) compound number. 10
8. On what principal will the interest for 2 yr. 6 mo. 15 da., at 4 per cent, amount to $25.01? 10
9. I have added 18 cows to my herd, thereby increasing its number 25 per cent. How many cows have I now? 10
10. Why does the value of a fraction remain unchanged when both terms are multiplied by the same number? 10

GEOGRAPHY.

1. Name the five oceans in order of size. 10
2. Bound the United States. 10
3. Locate (*a*) Denver, (*b*) St. Paul, (*c*) St. Louis. 10
4. Name (*a*) the city at the western terminus of the Erie canal, (*b*) at the eastern terminus. 10
5. Mention three leading industries of this State, and state something of each. 10
6. What is the capital of Spain? Of Germany? Of Russia? 10
7. Name three islands of the Mediterranean Sea. 10
8. What island-kingdom east of China? 10
9. What is the Gulf Stream? 10
10. Name a volcano (*a*) in Iceland; (*b*) one in South America; and (*c*) one in Sicily. 10

CIVIL GOVERNMENT.

1. Why do our National and State Constitutions provide that the terms of office of the Chief Executives shall be brief? 10
2. How long is the term of office of a United States Senator? 10
3. What is meant by "majority" and "plurality" in an election? 10
4. What is the name of the highest court in this State? 10
5. When do our presidential elections occur? 10
6. Which has the greatest influence in electing a President of the United States in proportion to population, New York or Rhode Island? Why? 10
7. Name the titles of the seven cabinet officers. 10
8. Name some act, which, if committed, would be treason against the United States. 10
9. Why does the Constitution of the United States require that bills for raising a revenue shall originate in the House of Representative? 10
10. Who is Commander-in-Chief of the military forces of this State? 10

READING.

To be supplied by the Commissioner.

P. M.

COMPOSITION.

1. Write a composition, taking for your subject one of the following vegetable products of this State, describing the plant from which it is obtained, the manner of cultivating it, if it be a cultivated plant, the manner of preparing it for commerce, and adding any other matter of interest pertaining to the subject: Flour, maple sugar, lumber, potatoes, hay, malt. Credits will be given on the merits of the composition with reference to three points:
   (1). The *matter, i. e.,* the thoughts it contains. 25
   (2). The correctness and propriety of the language used. 25
   (3). The orthography, punctuation, use of capitals and general appearance. 25
   (For remaining 25 per cent, see Regulations.)

GRAMMAR.

The Puritans brought to civil and military affairs a coolness of judgment and immutability of purpose which some writers have thought inconsistent with their religious zeal, but which were, in fact, the necessary effects of it.—*Macaulay.*

NOTE.—The first five questions following have reference to the above selection.

1. Mention all the clauses, classifying them as principal or subordinate 10

   NOTE.—In naming clauses it is sufficient to include only the simple subject and simple predicate.

2. Give all the modifiers of *immutability.* 10
3. Parse fully the second *which.* 10
4. Give syntax (case and why) of *effects.* 10
5. Under proper headings indicating the parts of speech, classify all of the words of the above extract. 10
6. Write a sentence containing a noun in apposition with the object of a transitive verb. 10
7. Write a sentence whose predicate is modified by an adverb, a phrase (preposition and its object) and a clause (subject and predicate). 10
8. Write a sentence having a clause used as its subject. 10
9. Write synopsis (first person, singular number) of the verb *be* in the indicative mode. 10
10. By sentence or sentences illustrate the connection of clauses by three different parts of speech. 10

PHYSIOLOGY AND HYGIENE.

1. What are lacteals? 10
2. How is the redness of a drunkard's face caused? 10
3. What are the best times for cleaning the teeth? Would you use warm or cold water? A hard or soft brush? 10
4. Describe the action of a muscle by which it produces motion. 10

5. Describe connective tissue and explain its office. 10
6. How are the bones held together at movable joints? 10
7. What muscular movement, necessary for respiration, is obstructed by tight lacing? 10
8. What functions of the skin have led to its being called the "third lung?" 10
9. In what season of the year do we need the greatest amount of sugar and fat in our food? 10
10. In what part of the eye is the retina? Of what nerve is it a part? 10

AMERICAN HISTORY.

1. Why did the Pilgrims come to this country to make it their home? 10
2. Into what colony was Negro slavery first introduced? When? 10
3. When and why was the Stamp Act repealed? 10
4. Where was the Continental Congress in session during the Revolutionary War? 10
5. What lead to the Mexican War? 10
6. Name two prominent generals of (*a*) the United States Army, and (*b*) one of the Mexican Army in that war. 10
7. During what war and where was the battle of the "Iron Ship" fought? 10
8. State some fact about Sherman's March to the Sea. 10
9. Of what nation did the United States Government purchase Louisiana? 10
10. What Chief Justice of the United States died a short time since? 10

CURRENT TOPICS.

1. How must the vacancy now existing in the Supreme Court of the United States be filled? 20
2. Why is the income from our State prisons now much less than the cost of conducting them? 20
3. What is Arbor Day in this State? 20
4. Name one of the two cities chartered by our last Legislature. 20
5. Of what organization is T. V. Powderly the chief executive officer? 20

ANSWERS TO QUESTIONS FOR JUNE, 1887.

Second and Third Grades.

ARITHMETIC.

1. $133.32.
2. Three billions, eight hundred five millions, four hundred.
3. $1.
4. A received 4,340, B, 5,551.
5. 109 $\frac{13}{23}$ ft.
6. 78 rd. 4 yd. 4½ in.
7. (*a*) A number associated with objects or quantities. (*b*) A concrete number that expresses a single denomination of weight, measure, or money value. (*c*) A number that expresses two or more denominations of the same kind of weight, measure, or money value.
8. $246.
9. 90.
10. Because the number of equal parts expressed by the resulting fraction is increased in the same ratio that the size of the parts is diminished.

GEOGRAPHY.

1. Pacific, Atlantic, Indian, Antarctic, Arctic.
2. North by British America, east by the Atlantic Ocean and the Gulf of Mexico, south by the Gulf of Mexico and Mexico, and west by Mexico and the Pacific Ocean.
3. (*a*) Capital of Colorado. (*b*) Eastern part of Minnesota on the Mississippi River. (*c*) Eastern part of Missouri on the Mississippi River.
4. (*a*) Buffalo. (*b*) Albany or Troy.
5. Answers will vary.
6. Madrid. Berlin. St. Petersburgh.
7. Any three of the following: Corsica, Sardinia, Sicily, Malta, Candia, Cyprus, or the Balearic Islands.
8. Japan.
9. Answers will vary.
10. (*a*) Hecla. (*b*) Aconcagua or Chimborazo. (*c*) Etna.

CIVIL GOVERNMENT.

1. They are thereby restrained from assuming and exercising arbitrary or unlawful authority.
2. Six years.
3. A majority is more than half the votes cast; a plurality is more votes than is received by any other candidate.

4. The Court of Appeals.
5. On the Tuesday next following the first Monday in November in every leap year.
6. Rhode Island; because she has as many Senators in Congress as New York.
7. Secretary of State, Secretary of the Treasury, Secretary of War, Secretary of the Navy, Secretary of the Interior, Attorney-General and Postmaster-General.
8. For one of her citizens to make war against the United States, etc.
9. Because the members of the House of Representatives more directly represent the people than the senators do.
10. The Governor.

COMPOSITION.

No answers can be given.

GRAMMAR.

1. Principal clause—Puritans brought. Subordinate clauses—Which writers have thought, which were effects.
2. Adjective, *an;* phrase, *of purpose;* the two subordinate clauses.
3. Pronoun, relative, third person, plural number, neuter gender, agreeing with its antecedents, coolness and immutability, subject of the verb were and in the nominative case.
4. Attribute of the predicate and agrees with the subject *which* in the nominative case.

Nouns.	Pronouns.	Adjectives.	Verbs.	Prepositions.	Conjunctions.
Puritans.	Which.	The.	Brought.	To.	And.
Affairs.	Their.	Civil.	Have thought.	Of.	But.
Coolness.	It.	Military.	Were.	With.	
Judgment.		A.		In.	
Immutability.		An.			
Purpose.		Some.			
Writers.		Inconsistent.			
Zeal.		Religious.			
Fact.		Necessary.			
Effects.					

6. I saw Mr. Jones, the *merchant.*
7. The children walked *briskly to school, when the bell rang.*
8. Who goes there? was said by the sentinel. That man is mortal is certain.
9. Present, I am.
   Past, I was.
   Future, I shall (will) be.
   Present perfect, I have been.
   Past perfect, I had been.
   Future perfect, I shall (will) have been.
10. John writes *and* Mary reads. Mr. Smith, *who* was sick, has recovered. He came *when* he was called.

PHYSIOLOGY AND HYGIENE.

1. They are vessels which absorb the chyle from the intestines and convey it to the thoracic duct.
2. By the capillaries of the face becoming enlarged and distended with blood.
3. Immediately after meals ; not excessively cold water; a soft brush.
4. It contracts, becoming shorter and thicker.
5. By ligaments attached to either bone.
6. It is composed of fine, white, strong fibres; its office is to bind together the other tissues of the body.
7. The muscles which raise the ribs are prevented from doing their work, because the constriction around the waist holds the ribs down.
8. The functions of excretion and absorption.
9. In winter.
10. In the back part ; it is a part of the optic nerve.

AMERICAN HISTORY.

1. To find a home where they could worship God according to their own consciences, and educate their children as they pleased.
2. Virginia. 1619.
3. 1766. Because the British Government found it could not be safely enforced.
4. In Philadelphia.
5. The annexation of Texas.
6. (*a*) Scott and Taylor. (*b*) Santa Anna.
7. During the civil war. In Hampton Roads.
8. Answers will vary.
9. Of France.
10. Morrison R. Waite.

CURRENT TOPICS.

1. By nomination by the President and confirmation by the Senate.
2. Because of the abolition of the contract system in prison management of labor.
3. By act of the Legislature the first Friday after the first day of May is made Arbor Day, on which day special exercises are to be held in the several schools, under the direction of the school officers in accordance with plans prescribed by the State Superintendent of Public Instruction.
4. Hornellsville or Ithaca.
5. The Knights of Labor.

QUESTIONS FOR EXAMINATION, AUGUST 14 and 15, 1888.

First Grade.

Tuesday, A. M.

ARITHMETIC.

In the solution of problems, every process must be indicated. Mere answers will not be accepted.

1. What is the date of maturity, term of discount, bank discount, and proceeds of a 2-months note for $300, made and discounted in New York, July 10, 1888? 10
2. If a street vender buy 5 bushels of chestnuts for $18.50, and sell them for 15 cents per liquid quart, how much does he gain? 10
3. A broker buys for $65 a note for $70, due in three months. What rate per cent. per annum will he receive for the use of his money, if the note is paid when due? 10
4. The sum of two numbers is 27lb. 3 pwt. 5 gr., and their difference is 12 lb. 19 pwt. 21 gr. Required the numbers. 10
5. What sum must be invested in 7 per cent bonds at 101½ per cent to yield an annual income of $980? 10
6. The list price of oil stoves is $15, but 12 stoves are sold for $126. What rate of commercial discount was allowed? 10
7. A farm fence 60 rods long is built 3 boards high and of 16-foot lumber. The top board is 4 inches wide, the middle board is 5½ inches, and the bottom board 7 inches. Find the required number of each kind of boards and the cost of the lumber at $13 per M. 10
8. At the same rate of speed, what part of the water discharged by a 5-inch pipe will a 3-inch pipe discharge? 10
9. The State of New York is 320 miles east and west, exclusive of Long Island. Find the length of map of the mainland on a scale of one-twelfth of an inch to the mile. 10
10. Find the least number which divided by any integral number between 5 and 12 will leave a remainder of 1. 10

GEOGRAPHY.

1. Bound New York State. (By political divisions and the Atlantic Ocean.) 10
2. Where does the Red River of the North rise? In what direction and into what does it flow? 10
3. Name and locate the largest city of (*a*) Illinois, (*b*) Louisiana, (*c*) California, (*d*) Virginia. 10
4. What bodies of water does the Welland Canal connect? What nation controls that canal? 10
5. Where are the Aleutian Islands? To what nation do they belong? 10
6. Name the large river on the bounding line between South Carolina and Georgia. What large city near its mouth? 10
7. Describe an all-water route from Liverpool to Constantinople. 10

8. Account for the mildness of the climate of Southern France. (43° N. latitude.) 10
9. When will the next winter-solstice occur? 10
10. Define (*a*) perihelion, (*b*) apogee, and (*c*) equinox. 10

CIVIL GOVERNMENT.

1. How are Postmasters of the more important post-offices appointed? 10
2. Give the names of five county offices. 10
3. How may a bill, which has been vetoed by the President, become a law? 10
4. Name one of the duties of the Lieutenant-Governor of this State? 10
5. What is the title of the highest judicial office of a county? 10
6. Where is the government of the District of Columbia vested? 10
7. What is the constitutional requirement for eligibility to the office of President of the U. S., as to residence? 10
8. Of how many members does our State Senate consist? 10
9. How long must an alien reside in this country before he can become a citizen? 10
10. How is this State prohibited from making a treaty with a foreign nation? 10

Tuesday, P. M.

COMPOSITION.

Write a composition on either of the following subjects:

ARBOR DAY.
A SUMMER RESORT.
MY FAVORITE GAME.

Credits will be given on the merits of the composition with particular reference to three points:

(1) The *matter*, i. e., the thoughts expressed. 25
(2) The correctness and propriety of the language used. 25
(3) The orthography, punctuation, division into paragraphs, use of capitals, and general appearance. 25

(For remaining 25 credits, see regulations.)

GRAMMAR.

So live, that when thy summons comes to join
The innumerable caravan that moves
To the pale realms of shade, where each shall take
His chamber in the silent halls of death,
Thou go not like the quarry-slave at night,
Scourged to his dungeon, but, sustained and soothed
By an unfaltering trust, approach thy grave
Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams.

The first eight questions refer to the above selection.

NOTES.—In naming a *clause*, include only its simple subject, and its simple predicate.

In giving the *syntax* of a noun or pronoun, give only the case and the reason why.

By *phrase* is meant a preposition with its object. In naming a phrase, give only the preposition and its simple (unmodified) object.

A modifier may be a *word, phrase*, or *clause*.

Infinitives are classed as *modes* of the verb.

1 and 2. State what each subordinate clause modifies, and state whether it is *adjective* or *adverbial*. 20

3. What are the modifiers of *realms?* 10

4. Name five *adverbial phrases* and state what each modifies. 10

5. Give examples from the above extract, of each part of speech found in it, not considering *articles* and *participles* as separate parts of speech. 10

6. Parse *to join*. 10

7. Parse *sustained*. 10

8. What is the syntax of *quarry-slave?* 10

9. Give the syntax of the second and third nouns in the following sentence: Mr. Jones, the baker was elected president. 10

10. Write a sentence with a transitive verb whose simple object is a participle having an object. 10

PHYSIOLOGY AND HYGIENE.

1. How are bones constructed to combine firmness and strength with lightness? 10

2. When a muscle is in action, how does it compare with the same muscle in a state of relaxation, as to length? As to thickness? As to hardness? 10

3. Why is it more wearisome to stand still than to walk about? 10

4. Name one or more provisions, in the structure of the skeleton, by which the body is protected from shocks and jars. 10

5. What occasions the necessity for food? 10

6. What process must the fat, we take as food, undergo before it can be absorbed into the blood? Describe the process? 10

7. Name five articles of food that are rich in albumen. 10

8. What fluid of the body has the power to dissolve abuminoid foods? In what condition is albumen most readily dissolved? When coagulated or uncoagulated? 10

9. Describe some experiment which you have seen, or of which you have read, showing the effect of alcohol on albumen. 10

10. How does the function of a *sensitive* nerve-fibre differ from that of a *motor-fibre?* 10

Wednesday, A. M.

AMERICAN HISTORY.

1. When and by whom was Boston founded? 10
2. Why was Roger Williams banished from Massachusetts Bay Colony? What settlement did he found? 10
3. What caused the French and Indian War? 10
4. For what is each of the following specially remembered: Benjamin Franklin? Lafayette? 10
5. What made Valley Forge memorable? 10
6. When, where, and why was the Constitution of the United States adopted? 10
7. Under what circumstances was Alexander Hamilton killed? 10
8. Between what cities and by whom was the first telegraph line built? 10
9. Name two great battles of the Civil War in which the Union forces were victorious? 10
10. To what political party did each of the following belong; Daniel Webster? Stephen A. Douglass? William H. Seward? 10

ALGEBRA.

1. What are *similar* terms? Write an equation made up of such terms. 10
2. To what is the square of the sum of two quantities equal? 10
3. Show that (*a*) the zero power of any quantity is equal to 1, (*b*) any quantity having a negative exponent is equal to the reciprocal of the same quantity with an equal positive exponent. 10
4. Factor $x^4 - y^4$, finding three factors. 10
5. Given $\frac{x}{c} + \frac{y}{c} = 1$, and $\frac{ax-by}{a-b} = c$, to find values of x and y. 10
6. Given $x-3y = a$, and $x + 4y = b$, to find x and y. 10
7. Expand $(3a+2c)^3$, by the binomial theorem. 10
8. Extract the cube root of $x^6 - 3x^5 + 5x^3 - 3x - 1$. 10
9. Given $x^2 + 3x = 10$, to find the values of x. 10
10. Given $x+y=5$, and $x^2y+xy^2=30$, to find the values of x and y. 10

BOOK-KEEPING.

1. In real accounts what are represented (*a*) by credits; (*b*) by debits? 10
2. Write a note for $75 and interest, payable in six months, at the First National Bank of Albany, N. Y., negotiable by endorsement, maker, William Douglass, payee, Henry L. Warren. 10
3. Required that the note above given be endorsed in full to George Wilson. 10

4–5. Rule form (*a*) of Day Book; (*b*) of Cash Book. 20

6–7. Enter in ruled forms of Day Book and Cash Book, for Henry Perkins, the following transactions: (*a*) Aug. 14, 1888. Henry Perkins bought of Miller & Bros., on account, 20 firkins of butter, 2,095 pounds at 22 cents per pound. (*b*) Aug. 20, 1888. Henry Perkins paid Miller & Bros., on account, $350. 20

8. On which side of a cash account must the balance be entered? 10

9. Give the rule for ascertaining net capital? 10

10. What are liabilities? 10

Wednesday, P. M.

SCHOOL LAW.

1. How may a trustee be legally authorized to employ a teacher who is within the second degree of relationship? 10
2. In addition to being a resident of the district and of full age, what are the qualifications, any one of which entitles a person to vote at a district meeting? 10
3. Where does the law direct that the boundaries of school districts shall be recorded? 10
4. Who are authorized to fix the rate of tuition for non-resident pupils? 10
5. What schools only are exempt from the provisions of the law requiring schools to be closed during the session of a teachers' institute? 10
6. What officer has power to remove a trustee or member of a board of education from office, for cause? 10
7. Who is legally responsible for the safe-keeping of the school register? 10
8. What officer has authority to create a new school district? 10
9. When is the beginning and when the close of the school year? 10
10. What is the time for holding the annual school meeting? 10

PHYSICS.

1. What causes a balloon to rise? 10
2. What is a vacuum? 10
3. What must be the shape of a lens that magnifies? 10
4. Upon what does the pressure of liquids depend? 10
5. What does a barometer measure? 10
6. What is meant by the specific gravity of a body? 10
7. Name the causes of the trade winds? 10
8. How does the length of a pendulum affect the rapidity of its vibrations? 10
9. What is an echo? 10
10. How does elevation above the earth's surface affect the boiling point of liquids? 10

METHODS.

1. What is the analytic method of instruction?
2. Why is the synthetic method especially applicable to primary instruction?
3. Why should objects be extensively used in primary teaching?
4. What is the chief value of map-drawing in teaching Geography?
5. What mental powers are chiefly used (1) In acquiring elementary knowledge? (2) In retaining knowledge? (3) In properly applying knowledge?
6. How does the imagination aid in acquiring knowledge of things beyond the reach of the senses?
7. Give reasons (1) for permitting pupils to "look over" while others read. (2) For not permitting them.
8. Apply the Delsarte maxim, "impression must precede expression," to a method of teaching primary reading.
9. (1) What is a mental power? (2) How is any mental power properly developed and strengthened?
10. How does a practical knowledge of Drawing aid the teacher in giving instruction in other subjects?
11. Give reasons for separating class work into the four divisions (*a*) Recitation. (*b*) Instruction. (*c*) Drill. (*d*) Application.
12. State, with reasons, the proper lengths of time that should intervene between preparation (study) and class work (recitation).
13. For what objects should pupils be required to solve text-book problems before class?
14. Why is good ventilation essential to good study?
15. How is the eye-sight of pupils affected who face a strong light? What is the remedy?
16. Give your views concerning home study by pupils in the public schools.

Select ten questions from the sixteen here given.

CURRENT TOPICS.

Twenty credits will be allowed for each of five of the following questions, to be selected by the candidate:

1. Who is President of the French Republic?
2. What rank in the United States army was recently revived by act of Congress? Upon whom was it conferred?
3. What change in respect to the method of execution of the death penalty was made by the last Legislature of this State?
4. Give the names of the nominees of two of the national political conventions recently held.
5. What is meant by "cremation?"
6. What eminent ex-United States Senator recently died in New York?
7. Whom did President Cleveland nominate for Chief Justice of the Supreme Court of the U. S.?

ANSWERS TO QUESTIONS FOR AUGUST 14 and 15, 1888.

First Grade.

NOTE.—It will be seen that the answers printed below are, in many cases, merely suggestive. Examiners will not be confined to the precise form or substance except where exact answers are required.

ARITHMETIC.

1. Date of maturity, September 13, 1888. Term of discount, 2 mo. 3 da. Bank discount, $3.15. Proceeds, $296.85.
2. $9.43.
3. $30\frac{10}{13}$ per. cent. per annum.
4. Greater number, 19 lb. 6 oz. 11 pwt. 13 gr. Smaller number, 7 lb. 5 oz. 11 pwt. 16 gr.
5. $14,210.
6. 30 per cent.
7. 62 boards of each width. Cost of lumber, $17.73.
8. $\frac{9}{25}$.
9. $26\frac{2}{3}$ inches.
10. 27,721.

GEOGRAPHY.

1. North by Canada and Connecticut; east by Vermont, Massachusetts, Connecticut and the Atlantic Ocean; south by the Atlantic Ocean, New Jersey and Pennsylvania; west by New Jersey, Pennsylvania and Canada.
2. In the northern part of the United States. It flows north into Lake Winnepeg.
3. (*a*) Chicago on Lake Michigan; (*b*) New Orleans on the Mississippi; (*c*) San Francisco on the bay; (*d*) Richmond on the James.
4. Lakes Erie and Ontario. England.
5. The western part of Alaska. United States.
6. The Savannah River. Savannah.
7. Answers may vary slightly.
8. It is caused by the warm westerly and south-westerly winds blowing over that section.
9. December 21, 1888.
10. (*a*) Near the sun (relating to the earth's nearness to the sun); (*b*) From the earth (relating to the moon's distance from the earth); (*c*) Equal night (referring to the time when day and night are of equal length).

CIVIL GOVERNMENT.

1. They are nominated by the President and confirmed by the Senate.
2.
3. It may pass both branches of Congress by a two-thirds vote.
4.
5. County Judge.
6. In Congress.

7. He must have been a resident of the United States for at least fourteen years.
8. Thirty-two.
9. Five years.
10. By the Constitution of the United States.

COMPOSITION.

No answers can be given.

GRAMMAR.

1 and 2. Adverbial clause, *That thou go,* modifies *live.*
Adverbial clause, *When summons comes,* modifies *go.*
Adjective clause, *That moves,* modifies *caravan.*
Adjective clause, *Where each shall take,* modifies *realms.*
Adverbial clause, (*Thou*) *approach,* modifies *live.*
Adjective clause, *Who wraps and lies,* modifies *one.*

3. *Realms* is modified by the adjectives, *the* and *pale,* the adjective phrase, *of shade,* and the adjective clause, *Where each shall take.*
5. *To realms* modifies *moves.*
In halls modifies *shall take.*
Like quarry-slave modifies *go.*
At night modifies *go.*
To dungeon modifies *scourged.*
By trust modifies *sustained* and *soothed.*
Like one modifies *approach.*
About him modifies *wraps.*
To dreams modifies *lies.*
5. No answer is needed here.
6. To join is a verb, principal parts, join, joined, joining, joined, regular, transitive, active voice, infinitive mode, present tense, used adverbially to modify the verb *comes.*
7. Sustained is a verb, principal parts, sustain, sustained, sustaining, sustained, regular, transitive, passive voice, participle, past tense, used adjectively and modifies the subject *thou.*
8. Object of the preposition *like* and in the objective case.
9. Baker is in apposition with the noun, Mr. Jones, and agrees with it in the nominative case. President is the predicate noun (attribute) and agrees with the subject Mr. Jones, in the nominative case.
10. John enjoys *studying* arithmetic.

PHYSIOLOGY AND HYGIENE.

1. The outer part is hard and strong, the inner part being hollow or porous.
2. It is shorter. It is thicker. It is harder.
3. Because in walking the muscles are continually changing from activity to rest, while in standing still, some are kept constantly contracted.
4. There are elastic pads of cartilage between joints, the bones are curved and somewhat flexible.

5. All vital action causes waste of tissue; this waste must be repaired by the nutriment of food.
6. It must be emulsified, that is, separated into very fine particles which will thoroughly mix with water, as in the case of milk.
7. Eggs, meat, grain, milk, cheese.
8. The gastric juice. When uncoagulated.
9. Pour alcohol on the white of an egg and it coagulates it.
10. The sensitive nerve fibre is stimulated at the outer extremity *c. g.* in the skin or muscle, and communicates the impression *inward* to the spinal cord or brain; while the motor nerve acts in the opposite direction, from the nerve center *outward* to the muscle or skin.

AMERICAN HISTORY.

1. In 1630. Puritan families under Gov. Winthrop.
2. On account of his religious opinions. Providence.
3. Previous inter-Colonial wars and encroachments of the French upon the English colonial possessions.
4. Answers will vary.
5. The terrible winter sufferings of the American soldiers during the Revolutionary war.
6. 1787. Philadelphia. Because of the utter weakness of the government under the Colonial Confederation.
7. In a duel with Aaron Burr in 1804.
8. Baltimore and Washington. Prof. S. F. B. Morse.
9. Answers will vary.
10. Webster was a Whig; Douglas was a Democrat; and Seward was a Republican.

ALGEBRA.

1. Terms made up of the same letters having the same exponents, as $2a^2+5a^2=7a^2$.
2. The square of the first, plus twice the product of the first into the second, plus the square of the second.
3. Proof, $\frac{a^2}{a^2}=a^{2-2}=a^0$; $\frac{a^2}{a^2}=1$; hence by Ax. $a^0=1$.

   Proof, $\frac{a^2}{a^3}=a^{2-3}=a^{-1}$; $\frac{a^2}{a^3}=\frac{1}{a}$; hence $a^{-1}=\frac{1}{a}$.
4. $x^4-y^4=(x^2+y^2)(x^2-y^2)=(x^2+y^2)(x+y)(x-y)$.
5. $x=\frac{ay}{b}$, and $y=\frac{bc}{a+b}$.
6. $x=\frac{4a+3b}{7}$, and $y=\frac{b-a}{7}$.
7. $27a^3+54a^2c+46ac^2+8c^3$.
8. x^2-x-1.
9. $x=2$ or -5.
10. $x=3$ and $y=2$.

BOOK-KEEPING.

1. In real accounts, credits represent either sums paid to us or goods sold to us, on account, by the party with whom we keep the account; debits, money paid by us or goods sold by us, on account, to the party with whom we keep the account.

2. $75.00. ————, N. Y., *Aug.* 14, 1888.

Six months after date, I promise to pay to the order of Henry L. Warren, seventy-five dollars, with interest, at the First National Bank of Albany, N. Y. Value received.

WILLIAM DOUGLASS.

3.

Pay to the order of
George Wilson.
Henry L. Warren.

4–5. See any approved form.

6–7. Account is headed "Miller and Bros."

(*a*) Entered on credit side of Day Book.
(*b*) Entered on debit side of Day Book, and on credit side of Cash Book.
(See approved forms.)

8. On the credit side of account.

9. Subtract total liabilities from total assets.

10. Debts that we owe—whether on account or bills payable.

SCHOOL LAW.

1. By a two-thirds vote of an annual meeting or of a special meeting called for that purpose.

2. First—being entitled to hold real estate under the laws of New York and either owning or renting real estate subject to taxation in the district.

Second—being a citizen and assessed upon the last completed assessment roll of the town, for personal property in a sum not less than fifty dollars.

Third—being a citizen and the parent or guardian of a child of school age who has attended the district school at least eight weeks during the preceding school year and who still resides with such parent or guardian.

3. In the office of the town clerk of the town or towns in which the district is situated.

4. Trustees and boards of education.

5 The schools of incorporated cities.

6. The Superintendent of Public Instruction.

7. The teacher.

8. The School Commissioner.

9. The school year begins Aug. 21st and ends Aug. 20th.

10. The last Tuesday in August and at 7:00 P. M. if no other hour has been fixed by the district.

PHYSICS.

1. The weight of the air causing an upward pressure.
2. Space devoid of all matter.
3. Convex.
4. Pressure depends upon the weight of the liquid and the height of the column.
5. The comparative weight of the air.
6. The specific gravity of a substance shows how many times heavier it is than an equal volume of some other body.
7. Heat and the rotation of the earth.
8. The shorter the pendulum, the more rapid are the vibrations.
9. A reflected sound.
10. It lowers the boiling point.

METHODS.

Answers cannot be given here.

CURRENT TOPICS.

1. M. Carnot.
2. The rank of general, Gen. Philip Sheridan.
3. Persons convicted of capital offenses committed after January 1, 1889, are to be executed by means of electricity.
4. Democratic, Grover Cleveland and Allen G. Thurman; Prohibition, Clinton B. Fisk and John A. Brooks; Republican, Benjamin Harrison and Levi P. Morton.
5. Burning instead of burying the dead.
6. Roscoe Conkling.
7. Melville W. Fuller.

QUESTIONS FOR EXAMINATION, TUESDAY, AUGUST 14, 1888.

Second and Third Grades.

A. M.

ARITHMETIC.

In the solution of problems, every process must be indicated. Mere answers will not be accepted.

1. Reduce to decimals and find their sum $\frac{3}{4}$, $\frac{3}{64}$, $\frac{13}{40}$, $\frac{91}{512}$. 10
2. Reduce to common fractions .0125, .06$\frac{1}{4}$, .067$\frac{7}{9}$, .006325. 10
3. By what number must 30$\frac{5}{8}$ be multiplied to produce 604$\frac{1}{5}$? 10
4. Divide 320 acres of land among A, B, and C so that A shall have 15 acres more than B, and C shall have 27 acres more than B. 10

5. From 10 bu. subtract the sum of 3.64 bu., $\frac{9}{16}$ bu, and 1 bu. 3 pk. 6.52 qt. 10
6. At 90 cents a yard, what will be the cost of a carpet for a flight of stairs of 18 steps, each $7\frac{1}{2}$ inches high and 10 inches wide? 10
7. Add 137 days to Aug. 14th, and give the resulting date. 10
8. Four men hire a pasture field together. The first pastures 4 cows 18 weeks; the second, 5 cows $12\frac{1}{7}$ weeks; the third, 11 cows $6\frac{1}{7}$ weeks; and the fourth, 9 cows 16 weeks. What part of the rent should each pay? 10
9. $\frac{1}{3}$ is what per cent. of $\frac{1}{2}$? 10
10. Find the interest on $1 for 3 yr. 1 mo. 29 da. at 5 per cent. per annum. 10

GEOGRAPHY.

1. Into what does the Potomac river flow? In which direction does it flow? 10
2. Name and locate the largest city of (*a*) Ohio, (*b*) Missouri, (*c*) Michigan. 10
3. How can you travel by water from Chicago to New Orleans? 10
4. What city of South America is on the equator? 10
5. Locate (*a*) Liverpool, (*b*) Edinburgh, (*c*) Berlin. 10
6. Mention a peculiar characteristic of Venice as to its streets. 10
7. Where are the Himalaya Mountains? Name the highest peak. 10
8. Name and locate a sea of Asia which is below the general sea-level. 10
9. How does the climate of England compare with that of Siberia in the same latitude? Why? 10
10. From what meridian do nearly all nations reckon longitude? 10

CIVIL GOVERNMENT.

1. What is a democracy? 10
2. What is the meaning of the phrase, "*Taxation without representation?*" 10
3. What is a limited monarchy? 10
4. Where does the power reside for imposing taxes for the use of the national government? 10
5. In whom is the power vested to make treaties with foreign nations? 10
6. If neither candidate for the office of vice-president receives a majority of the electoral votes, how shall that officer be elected? 10
7. Name one of the duties of an assessor. 10
9. What class of officers have power to issue a warrant of arrest? 10
9. What is an *executive session* of the senate of the U. S.? 10
10. By what authority is the number of state senators prescribed? 10

READING.

To be supplied by the commissioner.

P. M.

COMPOSITION.

Write a composition on either of the following subjects:

ICE CREAM.

THE VIOLIN.

INDUSTRIAL EDUCATION.

HOW NATURE PROVIDES FOR THE PROTECTION OF THE EYE.

Credits will be given on the merits of the composition with reference to three points:

(1). The *matter*, i. e., the thoughts expressed. 25

(2). The correctness and propriety of the language used. 25

(3). The orthography, punctuation, division into paragraphs, use of capitals, and general appearance. 25

(For remaining 25 credits, see Regulations.)

GRAMMAR.

Labor sits enthroned in palaces of crystal, whose high-arched roofs proudly sparkle in the sunshine which delighteth to honor it, and whose ample courts are crowded with the trophies of its victories in every country and in every age.—*Rev. Newman Hall.*

The first eight questions refer to the above selection.

NOTES.—In naming a clause, include only its simple subject and simple predicate.

In giving the *syntax* of a noun or pronoun, give only the *case* and the reason for it.

By *phrase* is meant a preposition and its object. In naming a phrase, give only the preposition and its simple (unmodified) object.

A modifier may be a *word, phrase* or clause.

Infinitives are classed as *modes* of the verb.

1. What are the modifiers of *palaces?* 10
2. What are the predicates of the subordinate clauses? 10
3. Give the syntax of *roofs* and *sunshine.* 10
4. Select (1) two adjective phrases, (2) two adverbial phrases. 10
5. What is the office of *enthroned?* 10
6. What modes (moods) are found in the above selection? 10
7. Parse *sits.* 10
8. Parse the first *whose.* 10
9. Write a sentence containing a pronoun used as a part of the predicate (attribute). 10
10. Write a sentence containing a present perfect compound participle, i. e., a participle in the present perfect tense. 10

PHYSIOLOGY AND HYGIENE.

1. What is the normal number of molar teeth in the permanent set? 10
2. Of what use is the sense of taste aside from the pleasure it yields? 10
3. Where is the *medulla oblongata* located? 10
4. Give the number and names of the bones in the fore-arm. 10
5. What is the proper temperature for a study room by the Fahrenheit thermometer? 10
6. Describe a good way of arranging the windows of a school room for ventilating the room when there is no other means of ventilation. 10
7. Give an illustration of an involuntary muscle; also give a definition of the term. 10
8. What cavities in the lower part of the heart?
9. Name five organs which are located in the cavity of the abdomen. 10
10. Of what three parts is the ear composed? 10

AMERICAN HISTORY.

1. Who were the first explorers of the Mississippi Valley? 20
2. What event is associated with each of the following dates: 1565, 1619, 1620, 1765? 20
3. Name one important event of each year of the Revolutionary War. 20
4. What was the Geneva award? What amount was awarded?
5. With what great enterprise is each of the following names associated: (*a*) DeWitt Clinton? (*b*) S. F. B. Morse? (*c*) Cyrus W. Field? (*d*) Ezra Cornell. (*e*) M. Bartholdi? 20

CURRENT TOPICS.

Twenty credits are allowed for each of five questions selected from the following by the candidate:

1. Who is the only living ex-president of the United States?
2. Who is emperor of Germany?
3. Who are the Mormons?
4. What is meant by the words "boodle aldermen?"
5. What is meant by the term "boycott?"
6. For what is Watkins, N. Y., noted?
7. State two methods of propelling street cars without the use of a steam locomotive.

ANSWERS TO QUESTIONS FOR AUGUST 14, 1888.

Second and Third Grades.

ARITHMETIC.

1. 1.299609375.
2. $\frac{1}{80}$, $\frac{1}{16}$, $\frac{61}{900}$, $\frac{253}{40000}$.
3. $19\frac{893}{1225}$.
4. A. 107 A. $106\frac{2}{3}$ sq. rd.—or $107\frac{2}{3}$ A.
   B. 92 A. $106\frac{2}{3}$ sq. rd.—or $92\frac{2}{3}$ A.
   C. 119 A. $106\frac{2}{3}$ sq. rd.—or $119\frac{2}{3}$ A.
5. 3 bu. 3 pk. 3 qt.
6. $7.88.
7. December 29th.
8. First man should pay $\frac{504}{2425}$ of the whole. The second, $\frac{440}{2425}$. The third, $\frac{473}{2425}$. And the fourth, $\frac{1008}{2425}$.
9. $66\frac{2}{3}$ per cent.
10. $.15$\frac{59}{72}$.

GEOGRAPHY.

1. Chesapeake Bay. In a south-easterly direction.
2. (*a*) Cincinnati on the Ohio. (*b*) St. Louis on the Mississippi. (*c*) Detroit on the Detroit River.
3. Answers will vary.
4. Quito.
5. (*a*) North-eastern part of England, on the Mersey. (*b*) Capital of Scotland, on the Firth of Forth. (*c*) Capital of Germany, on the Spree River.
6. The houses are often built on piles, and boats are used on the streets.
7. In Southern Asia. Mt. Everest.
8. Either of the following: Dead Sea, Caspian Sea, or Sea of Aral.
9. It is much milder. It is owing to the influence of the Gulf Stream and the warm west winds which blow over England.
10. The meridian of Greenwich, which is the International Prime Meridian.

CIVIL GOVERNMENT.

1. A government by the people.
2. It means that taxes are imposed on a people while the right is denied them of having a voice in ordering the taxes or of disposing of the revenue.
3. A monarchy in which the power of the monarch is restricted by the law.
4. In the Congress.
5. In the President with the advice and consent of the Senate.
6. By the Senate of the U. S.
7.
8. Justice of the Peace or other judicial officers.
9. A session for the purpose of considering treaties or the appointment of officers.
10. By the State Constitution.

COMPOSITION.

No answers can be given.

GRAMMAR.

1. The adjective phrase, *of crystal*, and the adjective clauses, *whose roofs sparkle* and *whose courts are crowded.*
2. *Sparkle, delighteth* and *are crowded.*
3. Subject of the verb *sparkle*, and in the *nominative* case. Object of the preposition *in*, and in the *objective* case.
4. Adjective phrases, *of crystal* and *of victories;* adverbial phrases, *in palaces, in sunshine with trophies, in country*, and *in age.*
5. A participle, in the past tense and modifies *labor.*
6. *Indicative* and *infinitive* modes.
7. *Sits* is a verb, principal parts, sit, sat, sitting, sat, irregular, intransitive, indicative mode, present tense, and agrees with its subject, labor in the third person and singular number.
8. *Whose* is a pronoun, relative, third person, plural number and neuter gender to agree with its antecedent, palaces, is in the possessive case and modifies roofs.
9. Example. *It is I.*
10. Example. *The boy having recited his lesson was dismissed.*

PHYSIOLOGY AND HYGIENE.

1. 12.
2. We use it, to some extent, to distinguish proper from improper food.
3. Below the brain and above the spinal cord.
4. Two: the ulna and the radius.
5. About 68 degrees.
6. Raise the lower sash a few inches and insert a piece of board to fill the opening below; this allows a passage of air between the sashes which passes upwards instead of striking the heads of the pupils.
7. The heart. An involuntary muscle is one which contracts and relaxes without the direction of the will.
8. The ventricles.
9. The stomach, the liver, the pancreas, the spleen, the kidneys, the intestines.
10. The outer ear, the middle ear or tympanum and the inner ear or labyrinth.

AMERICAN HISTORY.

1. LaSalle and Marquette.
2. 1565—St. Augustine. 1619—Slavery. 1620—The Pilgrims' landing. 1765—Stamp Act.
3. Answers will vary.
4. The amount paid to Americans by England on account of the Alabama depredations. $15,500,000.
5. (*a*) The Erie Canal. (*b*) The first telegraph line. (*c*) The first Atlantic Cable. (*d*) Cornell University. (*e*) The Statue of Liberty in New York Harbor.

CURRENT TOPICS.

1. Rutherford B. Hayes.
2. Wilhelm II.
3. The first settlers of Utah whose religion is based on the Book of Mormon, which permits polygamy.
4. Aldermen who were bribed to vote for certain measures.
5. An agreement among a large number of persons not to buy anything of certain individuals, or not to purchase of anybody articles manufactured by persons who are obnoxious to those making the agreement. The object is to compel compliance with their demands.
6. Its Glen, a very deep and romantic chasm cut out by a stream of water.
7. (1) By horses, (2) by electricity, (3) by a moving wire cable between the rails and below the surface of the ground.

QUESTIONS FOR EXAMINATION, SATURDAY, SEPT. 1, 1888.

Second and Third Grades.

A. M.

ARITHMETIC.

In the solution of problems, every process must be indicated. Mere answers will not be accepted.

1. Find the value of a trapezoidal field whose parellel sides are 12 ch. 41.1. and 17 ch. 87.1., and whose altitude is 13 ch. 51., at $80 per acre. 10
2. A reservoir 8 ft. x 4 ft. x 3 ft. 9 in., holds how many barrels of water? 10
3. Explain the different quantities expressed respectively by 24′ 37″, and 24 min. 37 sec. 10
4. Define (*a*) uniform scale; (*b*) varying scale. Illustrate each by a number involving it. 10
5. A farmer sold 48.64 acres of his farm of 112 a. 96 sq. rd. What per cent of his farm had he left? 10
6. Find the cost of a pile of 4-foot wood 27 ft. long and 6 ft high, at $5.50 per cord 10
7. What is the interest on $128.40 for 1 yr. 5 mo. 17 da. at 6 per ct.? 10
8. Required (*a*) all the prime factors of 23,660 (*b*) all the odd integral divisors of the same number. 10
9. Find the diagonal of a square park containing 20 acres. 10
10. Reduce to simplest form (*a*) $\frac{3}{4}$ of $\frac{1}{2}$ of $2\frac{3}{5}$ (*b*); $\frac{\frac{5}{13}}{\frac{8}{13}}$ 10

GEOGRAPHY.

1.	In what two States is the greater part of Lake Champlain?	10
2.	Name and locate the capital of those states.	10
3.	Name three New England States which border on the Atlantic Ocean.	10
4.	Where are the Cape Verde Islands?	10
5.	What strait connects the Atlantic Ocean with the Mediterranean Sea?	10
6.	Name the countries on either side of the Strait of Dover.	10
7.	Into what does the Rhine flow? The Danube? The Tiber?	10
8.	What two large lakes are the reputed sources of the River Nile?	10
9.	State facts as to the wonderful fertility of the Amazon Valley.	10
10.	Give two proofs that a spherical body represents the earth.	10

CIVIL GOVERNMENT.

1.	What is an absolute monarchy?	10
2.	What is the title of the highest executive officer of a county?	10
3.	Where is the highest judicial authority of the U. S. vested?	10
4.	Name one of the duties of a Sheriff.	10
5.	How are the Judges of the Court of Appeals chosen?	10
6.	Who appoints the various committees of House of Representatives of the U. S.?	10
7.	Who is the representative in Congress from your district?	10
8.	How may new States be admitted into the Union?	10
9.	Name one of the duties of a constable.	10
10.	Where is the power vested, under the Constitution of the U. S., to declare war?	10

READING.

To be supplied by the commissioner.

P. M.

COMPOSITION.

Write a composition on either of the following subjects:

County Fairs.
The Prohibitionists.
Lauguage Teaching.

Credits will be given on the merits of the composition with reference to these points:

(1).	The *matter*, i. e., the thoughts expressed.	25
(2).	The correctness and propriety of the language used.	25
(3).	The orthography, punctuation, division into paragraphs, use of capitals, and general appearance.	25

(For remaining 25 credits, see regulations.) (General Appearance of all papers.)

GRAMMAR.

Arabia is destitute of navigable rivers, which fertilize the soil, and convey its products to the adjacent regions; the torrents that fall from the hills are imbibed by the thirsty earth; the rare and hardy plants, the tamarind or the acacia, that strike their roots into the clefts of the rocks, are nourished by the dews of the night.—*Gibbon.*

NOTE.—In naming a clause, include only its simple subject and simple predicate.

In giving the syntax of a noun or pronoun, give only the case and the reason why.

By *phrase* is meant a preposition and its object. In naming a phrase, give only the preposition and its simple (unmodified) object.

A modifier may be a *word, phrase* or *clause.*

Infinitives are classed as *modes* of the verb.

1. What are the simple subjects of the principal clauses? 10
2. What are the predicates of the subordinate clauses? 10
3. Give the modifiers of *rivers.* 10
4. Make a list of the pronouns in the selection indicating to what class of pronouns each belongs. 10
5. What is the syntax of *tamarind?* 10
6. Parse *into* and *destitute.* 10
7. Name two nouns which are objects of prepositions and three nouns which are objects of verbs. 10
8. Define a *personal pronoun.* 10

9 and 10. By sentences illustrate the connection of clauses by three different parts of speech, and indicate to what part of speech each connective used, belongs. 20

PHYSIOLOGY AND HYGIENE.

1. What name is be given to the whole series of bones united together? 10
2. When a muscle acts, what effect does it produce upon the joints between the ends? 10
3. Name five articles of food that are rich in starch. 10
4. Name a fluid of the body that has the power to convert starch into sugar. 10
5. What important work is done by the muscular wall of the stomach while digestion is going on? 10
6. What ingredient of air is of vital importance to respiration? 10
7. When is a room well ventilated? 10
8. What prevents the pulse from being felt in the veins? 10
9. Describe a spinal nerve. 10
10. What is a tonic? A stimulant? A narcotic? How could alcohol be so administered as to produce either of these effects? 10

AMERICAN HISTORY.

1. What portion of the United States was first settled by (*a*) the Spanish? (*b*) the English? (*c*) the Dutch? 20
2. Who were the Huguenots? Why did many of them come to America? 20
3. For what purpose, and by whom, was Georgia first settled? 20
4. When and where was Washington first inaugurated President of the United States? 20
5. Name in order the first *five* Presidents, and give the length of time each served. 20

CURRENT TOPICS.

Ten credits are given for each of five questions, to be selected from the following by the candidate:

1. What specially eminent divine of this State died within the past two years?
2. Name two of the three cities chartered by the last Legislature of New York?
3. What is mean by the "township system" as applied to schools?
4. Name two prominent features of the "Uniform Examination" system, now in use in this State.
5. What is meant by "Civil Service Reform?"
6. Who is now presiding officer of the United States Senate?
7. For what is Saratoga noted?

ANSWERS TO QUESTIONS FOR SEPTEMBER, 1, 1888.

Second and Third Grades.

ARITHMETIC.

1. $1,145.95.
2. $28\frac{268}{539}$ barrels.
3. 24′ 37″ is a measure of distance on the surface of a sphere or of angular space. 24 min. 37 sec. is a measure of time, or duration.
4. A uniform scale is one in which the variation or step from any unit to the next greater is by the same multiplier. A varying scale is one in which some or all the steps are by different multipliers.

   Ex. 1. 3,475,—uniform scale, 10. Ex. 2. 24 mi. 16 rd. 4 ft. 6 in.,—varying scale, descending, 320, $16\frac{1}{2}$, 12.
5. $56\frac{452}{563}$ per cent remaining.
6. $27.84.
7. 11.28.
8. (*a*) 2, 2, 5, 7, 13, 13. (*b*) 5, 7, 13, 35, 65, 91, 169, 455, 845, 1,183, 5,915.
9. 80 rods.
10. (*a*) $\frac{39}{40}$. (*b*) $\frac{85}{104}$.

GEOGRAPHY.

1. In New York and Vermont.
2. Albany, on the Hudson. Montpelier, on the Onion River.
3. Answers will vary.
4. West of Africa in the Atlantic Ocean.
5. Strait of Gibraltar.
6. England on the north, and France on the south.
7. The German Ocean. The Black Sea. The Mediterranean.
8. Albert Nyanza and Victoria Nyanza.
9. Answers will vary.
10. Circumnavigation, shadow on moon, or the appearance of ships at Sea. (Any two).

CIVIL GOVERNMENT.

1. One in which the monarch's will is law.
2. Sheriff.
3. In the Supreme Court of the United States.
4.
5. By the people.
6. The Speaker of the House.
7.
8. By an act of Congress.
9.
10. In the Congress.

COMPOSITION.

No answers can be given.

GRAMMAR.

1. *Arabia, torrents* and *plants.*
2. *Fertilize* and *convey, fall, strike.*
3. The adjective, *navigable,* and the adjective clause, *which fertilize.*
4. Relative pronouns, *which, that.* Personal pronouns, *its, their.*
5. In apposition with *plants,* and agrees with it in the *nominative* case.
6. *Into* is a preposition and shows the relation between *clefts* and *strike. Destitute* is a qualifying adjective, positive degree and modifies *Arabia.*
7. Objects of prepositions, *rivers, regions, hills, earth, clefts, rocks, dew, night.* Objects of verbs, *soil, products, roots.*
8. A pronoun whose form is varied to indicate *person* is called a *personal* pronoun.

9–10. John came and James went away. Mr. Smith, who called, immediately left. They returned when they had finished the work. *And* is a conjunction; *who* is a pronoun; *when* is an adverb.

PHYSIOLOGY AND HYGIENE.

1. The skeleton.
2. It may bend it, if extended, or it may extend it, if bent.
3. Flour, corn meal, potatoes, rice, sago.
4. The saliva. The intestinal juice.
5. They move the food about in the stomach and so mix it with the gastric juice, and drive it out of the stomach when properly reduced.
6. Oxygen.
7. When there is free ingress of fresh air and egress of the vitiated air.
8. The capillaries so obstruct the passage as to prevent the pulse wave from extending into the veins.
9. It is a nerve, taking its origin in the spinal cord and extending from it, to the right or left, to some other part of the body.
10. A tonic is a medicine that imparts vigor to the body. A stimulant is a medicine that gives a quick but transient impulse to the action of the heart. A narcotic is a medicine or poison that produces insensibility to pain, or stupor, and in large doses, death. In small doses, properly administered, it acts as a tonic; in larger doses it becomes a stimulant; in still larger overdoses it becomes a narcotic.

AMERICAN HISTORY.

1. (*a*) The south-eastern part, including Florida, and what is now New Mexico.
   (*b*(All the remaining eastern coast, except New York and New Jersey.
   (*c*) The above mentioned two States.
2. French Protestants. To escape persecution on account of their religious beliefs.
3. As a refuge for imprisoned debtors. By James Oglethrope.
4. April 30, 1789. In New York City.
5. George Washington, eight years; John Adams, four years, Thomas Jefferson, eight years; James Madison, eight years; James Monroe, eight years.

CURRENT TOPICS.

1. Rev. Henry Ward Beecher.
2. Hornellsville, Ithaca, and Middletown are the three.
3. Each town has one school board controlling all of the schools of the town.
4. No answer need be given here.
5. The appointment of persons to offices of a minor character, as the result of competitive examinations, and the retention in office of the appointee.
6. John J. Ingalls.
7. For its mineral springs and its immense hotels.

QUESTIONS FOR EXAMINATION, SEPTEMBER 11, 1888.

Second and Third Grades.

A. M.

ARITHMETIC.

NOTE.—In the solution of these problems, every process must be indicated. Mere answers will not be accepted. 10

1. Find the amount of an agent's sales when his commission at 5 per cent amounts to $37.65. 10
2. The tax on an assessment of $8,500 is $48.37. Required the rate on $1,000 of assessment. 10
3. A note is made and dated Sept 11. 1888, and is made payable in 90 days. Find the date of maturity. 10
4. Give the general principles of division. 10
5. What is the ratio of 5 bu. to 3 pk. 6 qt.? 10
6. If 45 horses eat $1\frac{1}{2}$ tons of hay in 30 days, how many tons should last 84 horses 56 days? 10
7. The list price of a certain kind of stove is $38, and the retail dealer is allowed commercial discounts of 20 per cent, 5 per cent, and 3 per cent. What price does he pay for the stoves? 10
8. Find the area of a triangle whose base is 22 ft. 8 in. and altitude 19 ft. 9 in. 10
9. A car contains 21,643 pounds of wheat. Find the value of the load at 92 cents per bushel. 10
10. On a note made and dated June 3, 1887, for $150 and interest, is indorsed a payment of $78, April 17, 1888. Interest at 6 per cent. How much remains due on the note to-day? 10

GEOGRAPHY.

1. Name the rivers on which the following cities are situated, respectively: (*a*) Watertown, (*b*) Ogdensburgh, (*c*) Elmira. 10
2. Locate (*a*) Richfield Springs, (*b*) Saratoga Springs. 10
3. What river is the outlet of Otsego Lake? Of Oneida Lake? 10
4. Name and locate an important city of Georgia and one of Tennessee. 10
5. Where are the Sandwich Islands? Name the chief city. 10
6. Mention two prominent articles imported into the United States from China 10
7. Which grand division has the most regular line of sea coast? Which the most irregular? 10
8. Name in order, from west to east, the three peninsulas of southern Asia. 10
9. What are Isothermal lines? Illustrate by application to the United States. 10
10. Mention two effects of the earth's rotation upon its axis. 10

CIVIL GOVERNMENT.

1. What is larceny? 10
2. By what authority is the State prohibited from coining money? 10
3. What is the title of the highest executive officer of a State? 10
4. Why is the term of office of a Judge made longer than that of an executive officer? 10
5. Name two offices that are filled by officers elected by joint ballot of the two branches of our Legislature. 10
6. The Speaker of the House of Representatives can vote upon any question that comes before that body, while the Vice-President has only a casting vote in the Senate. Why this distinction? 10
7. What are the requirements for eligibility to the office of President of the United States, as to age? 10
8. Of how many members is the United States Senate, at present, composed? 10
9. What are the divisions of a city called? 10
10. Why, in 1824, was the President of the United States elected by the House of Representatives? 10

READING.

To be supplied by the Commissioner.

P. M.

COMPOSITION.

Write a composition on either of the following subjects:

The description of a church edifice. Teachers' associations. The educational influence of a good school-house.

Credits will be given on the merits of the composition with particular reference to three points:

(1) The *matter*, i. e., the thoughts expressed. 25

(2) The correctness and propriety of the language used. 25

(3) The orthography, punctuation, division into paragraphs, use of capitals and general appearance. 25

For remaining 25 credits see Regulations.

GRAMMAR.

In short, the City of Rome was enriched with the spoils of the whole world, and had that air of pomp and magnificence which suited the capital of the greatest empire that the world ever saw.—*Peter Parley.*

NOTES.—In naming a clause, include only its simple subject and simple predicate.

In giving the syntax of a noun or pronoun, give only the case and the reason for it.

By *phrases* is meant a preposition and its object. In naming a phrase, give only the preposition and its simple (unmodified) object.

A modifier may be a *word, phrase* or *clause.*

Infinitives are classed as *modes* of the verb.

[The first six questions refer to the above selection.]

1. Classify the clauses as principal and subordinate. 10
2. What are the modifiers of the *subject* of the principal clause? 10
3. How is the predicate *was enriched* modified? 10
4. Give the modifiers of *air* and *empire.* 10
5. Parse the first *and,* and the first *that.* 10
6. Parse the second *that.* 10
7. Define a *relative* pronoun. 10
8. Write two *abstract* and two *collective* nouns. 10
9. Write a sentence whose simple subject is a *participle.* 10
10. Write a sentence having a clause used as subject. 10

PHYSIOLOGY AND HYGIENE.

1. What is the office of epiglottis? 10
2. Describe the relative position of a pair of flexor and extension muscles as to the joint they serve to move. 10
3. What change must starch undergo before it can be absorbed into the blood? 10
4. Name an inorganic substance in food of which the bones are largely composed. 10
5. In what way may the teeth be used to aid the stomach and lighten its work? 10
6. In what way does the oxygen of the air reach the blood? 10
7. Which way is the heart (above or below, to the right or left, in front or behind) from the right lung? From the diaphragm? From the sternum or breast bone? From the thoracic duct? From the stomach? 10
8. If the body came in contact with no external impurities would there be need of bathing? Why? 10
9. Name four different organs of special sense? 10
10. If a person drink alcohol in sufficient quantities to cause it to act as a stimulant, will there be danger of injury to the heart and blood-vessels? Give the reason for your answer. 10

AMERICAN HISTORY.

1. Mention something of interest as to Andrew Jackson; Henry Clay; John C. Calhoun. 15
2. Who was President of the United States for only one month? 5
3. Mention one specially important event of each year of the Civil War. 50
4. Name three candidates for the Presidency in 1884, and state what party each represented. 15
5. State facts as to (*a*) Horatio Seymour, (*b*) Roscoe Conkling, (*c*) Horace Greeley. 15

CURRENT TOPICS.

Ten credits are given for each of five questions to be selected from the following by the candidate:

1. What is meant by the River and Harbor Bill?
2. Name a candidate recently nominated for a State office by one of the leading political parties of this State and specify the office.
3. What is meant by Presidential Electors?
4. Between what nations was the proposed Fisheries Treaty of 1888 negotiated?
5. What prominent officer of the United States Army died in the summer of 1888? Who succeeds him?
6. What is the Phonograph?
   Name the inventor.
7. What is meant by a Wagner or Pullman car?

ANSWERS TO QUESTIONS FOR SEPTEMBER 11, 1888.

Second and Third Grades.

ARITHMETIC.

1. $753.
2. $5.69.
3. Dec. 13th.
4. Multiplying the dividend by any number multiplies the quotient by the same number.
   Multiplying the divisor by any number divides the quotient by the same number.
   Dividing the dividend by any number divides the quotient by the same number.
   Dividing the divisor by any number multiplies the quotient by the same number.
   Multiplying or dividing both dividend and divisor by the same number does not change the quotient.

5. $5\frac{1}{3}$.
6. $5\frac{17}{75}$ tons.
7. $28.01.
8. 223 sq. ft. 120 sq. in.
9. $331.86.
10. $81.77.

GEOGRAPHY.

1. (*a*) Black River, (*b*) St. Lawrence or Oswegatchie, (*c*) Chemung.
2. (*a*) On Canadarago Lake in Otsego county, (*b*) near Saratoga Lake in Saratoga county.
3. The Susquehanna. The Oneida.
4. Answers will vary.
5. In the Pacific Ocean. Honolulu.
6. Answers will vary.
7. South America. Europe.
8. Arabia. Hindostan. Farther India.
9. Lines of equal temperature. In the United States, owing to the influence of the warm currents on the west and the cold current on the east, the climate in the same latitudes is milder in the western part than in the eastern.
10. Day and night. It is one cause of our *present* changes of seasons.

CIVIL GOVERNMENT.

1. It is wrongfully taking the personal property of another.
2. By the Constitution of the U. S.
3. Governor.
4. Because, from the nature of his duties, it is desirable that he be, as far as possible, independent.
5.
6. Because the Speaker is a member of the House, while the Vice-President is only the presiding officer, *ex officio*, of the Senate.
7. He must be at least thirty-five years old.
8. Seventy-six.
9. They are called wards.
10. Because neither of the candidates had a majority of the electoral votes.

COMPOSITION.

No answers can be given.

GRAMMAR.

1. Principal clause, *city was enriched.* Subordinate clauses, *which suited* and *that world saw.*
2. The subject, city, is modified by the adjective *the* and the adjective phrase, *of Rome.*
3. The predicate, was enriched, is modified by the adverbial clause, *with spoils.*
4. Air is modified by the adjective, *that,* the adjective phrase, *of pomp and magnificence,* and the adjective clause, *which suited;* empire is modified by adjectives, *the* and *greatest,* and the adjective clause, *that world saw.*
5. *And* is a conjunction and connects the predicates *was enriched* and *had. That* is a specifying adjective and modifies *air.*
6. That is a pronoun, relative, agrees with its antecedent, empire, in the third person, singular number, and neuter gender, is the object of *saw* and is in the objective case.
7. A pronoun which connects clauses is called a *relative* pronoun.
8. Examples of abstract nouns, *truth, justice, honesty.* Examples of collective nouns, *school, army, assembly.*
9. Example, *Jumping from a moving railroad train is dangerous.*
10. *That study is useful is evident. "I will go," was his answer.*

PHYSIOLOGY AND HYGIENE.

1. To prevent solid or liquid substances from entering the windpipe.
2. The flexor is on the inside of the joint or the side toward which it bends; the extensor is on the opposite or outside.
3. It must be converted to sugar.
4. Lime.
5. They may chew the food until it is finely masticated.
6. It enters the lungs and then finds its way through the tissue of the air-sacs, by osmose, to the capillaries of the lungs.
7. To the left. Above. Behind. In front. Above.
8. Yes. Because of the excretions that come from the pores of the skin.
9. The eye, the ear, the nose, the tongue.
10. There will be danger; because of the excessive action of the heart.

AMERICAN HISTORY.

1. Answers will vary.
2. William Henry Harrison.
3. Answers will vary.
4. Any three of the following:

   Grover Cleveland, Democratic party.
   James G. Blaine, Republican party.
   J. P. St. John, Prohibition party.
   B. F. Butler, People's party.
   Belva Lockwood, Female Suffrage party.
5. Answers will vary.

CURRENT TOPICS.

1. An act of Congress making large appropriations for the improvement of rivers and harbors in various parts of the country.
2. Governor — Warner Miller. Lieut.-Governor — S. V. R. Cruger. Judge of Court of Appeals—Wm. Rumsey.
3. Persons chosen in each State once in four years, to elect a president and vice-president of the United States.
4. United States and Great Britain.
5. Gen. Phillip H. Sheridan.
   Gen. Schofield.
6. A machine that records and reproduces sounds.
   Edison.
7. A drawing-room or sleeping car specially provided with comforts, and conveniences of travel, for which an extra charge is made.

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